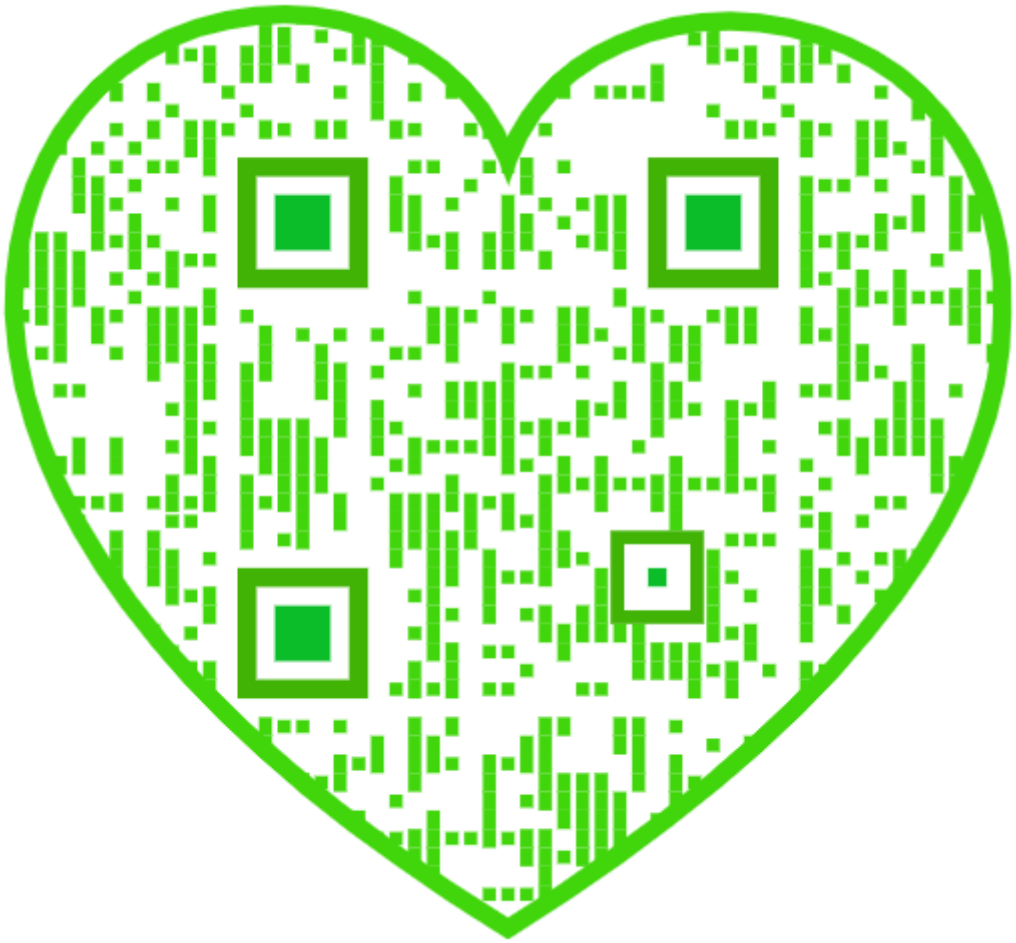
The Horse

Management in Health and Disease.

BY

George Armatage, M.R.C.V.S.



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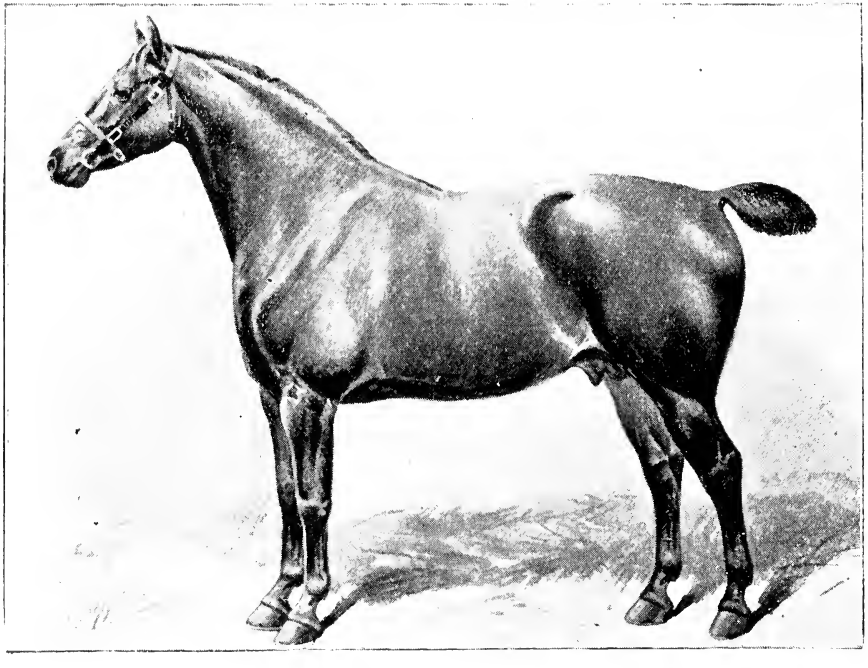
THE HORSE



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THE HORSE

ITS VARIETIES AND MANAGEMENT

IN HEALTH AND DISEASE

REVISED AND ENLARGED

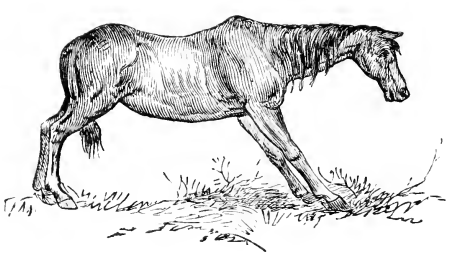
BY

GEORGE ARMATAGE, M.R.C.V.S.

Formerly Lecturer in the Albert and Glasgow Veterinary Colleges

AUTHOR OF "THE HORSE DOCTOR," "THE CATTLE DOCTOR," ETC.

WITH FULL-PAGE AND OTHER ILLUSTRATIONS



LONDON

FREDERICK WARNE AND CO.

AND NEW YORK

1896

PREFACE.

THE value of the horse stock of the United Kingdom, constituting so large a proportion of the national wealth, is a sufficient inducement for a study of the causes which deteriorate the standard of excellence. These causes lie in the prevalence of disease, the severity of which an intelligent system of management is calculated to reduce, and in many cases prevent.

It is the object of the present treatise to render this proposition generally acceptable.

The call for a new Edition of the three volumes (including the present) forming THE FARMER'S LIBRARY, within twelve months, has enabled the Author to make further alterations. The part including the Varieties of the Horse, with his Management, already copious in detail, has been carefully revised, and the text largely augmented.

The subject of Remedies is discussed in a separate division, as fully as the available space will admit, supplemented by ample directions concerning the doses, and forms of combination to be observed in their use.

Subsequent chapters are devoted to the Diseases of of the Horse, their Nature, Causes, and Treatment. They are replete with information, given in simple style

and within the comprehension of most readers; the divisions relating to Nature and Causes being considerably extended. This necessarily led to the abbreviation of the paragraphs relating to Treatment. Whatever may be supposed to be loss in this direction has been more than accounted for by the adoption of reference figures, thus avoiding frequent repetition of the same directions.

Local injuries and lameness are treated as fully as space will admit, and the concluding chapter is devoted to the subject of Shoeing, in which will be found simple but useful hints on the preservation of the feet.

A new feature consists of the introduction of illustrations of some of the best animals of the day. For these the Author has laid himself under deep and abiding obligations to a number of intimate friends, and gentlemen who have most kindly and promptly responded to his application for portraits of their distinguished prize winners. Except where otherwise stated, the Plates have been reproduced from photos and drawings furnished by the Owners or Breeders, whose names are given in connection with each.

G. A.

LONDON, 1894.

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THE HORSE.

CHAPTER I.

EARLY HISTORY AND HABITS OF THE HORSE.

Early history of the Horse—General Habits—Parts of the frame of the Horse—Paces—Teeth as signs of age—Memory, &c.

THE EARLY HISTORY AND ORIGIN OF THE HORSE is wrapped in obscurity and fable, and we really know little or nothing of it, except that we have reason to believe that he first came from Asia, like man, and according to the Mosaic account, all other animals now existing; and that he was used in Egypt more than 1600 years before Christ. But with the *history* of the horse I shall not encumber this book, which might be enlarged to an enormous extent if this department were entered into at length. Suffice it, then, to discuss the present condition of the horse, and its more recent origin, as now existing in Great Britain, in addition to his general habits.

THE HABITS OF THE HORSE, in all countries, and of all varieties, are pretty much alike. Wherever he is at large he is bold, but wary, and easily taking note of the approach of man, to give him as wide a berth as he possibly can, or rather show him a clean pair of heels. Wild horses exist to the present day in the interior of Asia and in South America. But both the horses of the Tartars and those of La Plata are descended from domesticated animals, and can scarcely be called wild in the ordinary acceptation of the term. Indeed, the Californian horses, which are still more recently bred in a wild state from Spanish horses, are quite as wild as those described by Sir F. B. Head. From

their constant state of liberty, and their roving habits, in order to obtain food and water, they are inured to fatigue, and can bear an enormous amount of long-continued fast work, without failing under it, and without that training which the domesticated animal must have. The walk and the gallop are the horse's natural paces, and all others are acquired; but nothing can exceed the fiery animation and elegance of movement of the free horse; and in these two paces art has done nothing to improve his form, except, perhaps, in slightly increasing the speed of the latter. In all countries, and in every age, the horse feeds upon grain or grass, though it is said that in Arabia he is occasionally supported upon camel's milk, when food such as he usually lives upon is not to be had.

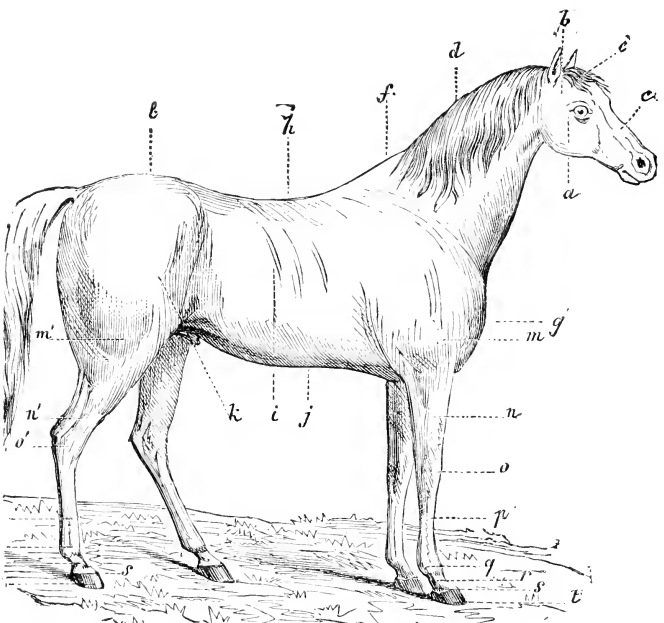
It may be useful to specify the terms employed to describe the principal parts of the horse. These details will not prove altogether superfluous, as some of the words we are about to explain not unfrequently occur in conversation.

The two parts of the head of the horse which correspond to the temples, or *temporals* in man, are above the eyes. The *orbit* is the bony cavity designed to receive and protect the eyeball, with its needful muscles, nerves, and blood-vessels, &c. At the inner angle is situate the *haw*, or *membrana nictitans* (*a*), a cartilaginous plate, which forms the mechanism enabling the horse, especially, to remove offending substances. He also in common with other nocturnal animals possesses the power of seeing objects clearly in the twilight and comparative darkness. This is conferred by an arrangement within and at the back of the eye, known as the *tapetum lucidum*, or green carpet. The *eyepits* (*b*) are hollows above the eyes, covered by skin, intended to provide for motion of the eyeball during the action of its muscles, as well as those engaged in mastication.

The *face* (*c*) is that part of the head which extends from the eyes to the nostrils. The *forehead* is above the eyes. These are seen by the observer as he stands in the front of the animal.

The neck of the horse is designated by the term *crest*

(*d*); it is comprised from one end to the other between the mane on the upper side and the gullet on the lower. The *fore-lock* (*e*) is the portion of the mane which is on the top of the head and falls over on the forehead between the eyes.



The different Parts of the Body of the Horse.

The *withers* (*f*) is the spot where the shoulders meet up above, between the back and the neck, at the point where the neck and the mane come to an end.

The *chest* (*g*) is that part which is in front between the shoulders and below the throat.

The *back* (*h*) commences at the withers and extends all along the spine as far as the crupper. When the horse is

fat, the whole length of the spine forms a kind of hollow, which is said to be *channeled.*

The space which is included within the ribs is called the *barrel* (*i*); the name of *stomach* (*j*) is also given to the lower part of the body which joins the *os sternum* and the bottom of the ribs.

The *flanks* lie at the extremity of the stomach and extend as far as the hip-bones. The tail is divided into two parts: the stump or *dock*, and the hair.

The upper part of the front leg of the horse is called the *shoulder* (*m*), although it corresponds with the fore-arm in a man; the *fore-arm* (*n*) follows it lower down.

The joint which is below the fore-arm is called the *knee* (*o*); it corresponds to the place of the wrist in man, and forms an angle turning inwards when the leg is bent.

The *shank* (*p*) forms the second portion of the fore-leg; it commences at the knee-joint, and corresponds to the *metacarpus* in man.

Behind the shank is a tendon, which extends from one end to the other, and is called the *back-sinew.*

The *fetlock-joint* (*q*) is the articulation immediately below the shank.

The *fetlock* itself is a tuft of hair covering a sort of soft horny excrescence, which is called the *ergot.*

The *pastern* (*r*) is the portion of the leg between the fetlock-joint and the foot.

The *coronet* (*s*) is an elevation lying below the pastern, and is furnished with long hair falling over the hoof, all round the foot.

The *hoofs* (*t*) form, so to speak, the nails of the horse, and consist of a horny substance.

In order to describe the parts which make up the hind legs of the horse, we must go back to the haunches. Each of these contains the *femur*, and corresponds to the thigh of a man. It is, therefore, the thigh of the horse, which is joined on to the body, and bears the name of buttocks. It is terminated below and in front by the *stifle* (*k*), which is constituted similarly to the knee-joint of man. It is situated below the haunch, on a level with the flank, and shifts its place when the horse walks.

The highest part of the hind leg, which is detached from the body, is called the *thigh*, or *gaskins* (*m'*), and corresponds to the leg of a man. It extends from the stifle and lower part of the buttocks down to the *hock* (*o'*).

The hock or *tarsus* is the first joint below the thigh. It comprises the so-called instep and heel in man. In the latter it is more concerned in weight-bearing than progression, as in the horse.

Below the hock are the shank, the fetlock-joint, the pastern, and the foot, just the same as in the fore-legs.

We will now say a few words as to the diversity of colour in the coat of the horse, in order to fix the meaning of the terms which are generally employed to designate the various hues which the coat presents.

Bay is a reddish nut-brown colour, with various shades. *Dark bay* horses are of a very dark brown, almost black, except on the flanks and tip of the nose, where they are of a reddish colour. The *golden*, or *light bay*, is a yellow sun-light hue. *Dappled bay* horses have on their rumps spots of a darker bay than on the rest of their bodies. In bay horses the extremities, the mane, and the tail are always black.

There are three kinds of black horses: the *rusty black*, which is of a brownish tinge, more or less conspicuous in various lights; the *black*, and the *coal-black*, which is the darkest of all.

Dun-coloured horses, of which there are several shades, are of a yellowish-sandy hue; the mane and tail of these are either white or black. Some of the latter have a black line along the vertebra, which is called a *mule's*, or *eel-stripe*.

Chestnut is a kind of reddish or cinnamon-coloured bay. There are several shades of it, among which are the *bright chestnut*, which is the colour of a red cow's coat; the *common chestnut*, which is neither dark nor bright; the *bay chestnut*, which verges upon the red; the *burnt chestnut*, which is dark, and nearly approaches black. Some chestnut horses have white manes and tails, others black. The *roan* is a mixture of red and white.

Grey horses have white hair mixed with black or bay. There are several modifications of this colour; the *dappled-*

grey, the *silver-grey*, the *iron-grey*, &c. Dapple-grey horses have on the back and other parts of the body a number of round spots, in some cases black in others of a lighter hue; these spots are somewhat irregularly distributed. Grey horses as they increase in age become lighter in colour, ultimately becoming white.

Piebald and *skewbald* horses are white, with large irregular spots and stripes of some other colour irregularly arranged. The different kinds are distinguished by the colour that is combined with the white, as the *piebald* proper, which are white and black; the *skewbald*, which are white and bay; the *chestnut piebald*, which are white and chesnut.

The horses which have small black spots on a white or grey coat are called *flea-bitten*, particularly prevalent in India among Arabs.

We have hitherto considered the wild and domestic horse in common, both as regards their structure and their colour, in short, their outward appearance generally, without noticing the different breeds, which must soon occupy our attention. But before we enter upon the study of the various equine races, it is necessary to give a short explanation as to the way in which the bit regulates the paces of the horse. By this we are led to speak of the construction of the mouth, a knowledge of which is most useful.

The horse either walks, trots, gallops, or ambles.

The paces of the horse are essentially modified by means both of the bit and spur. The spur excites a quickness of movement; the bit communicates to this movement a due amount of precision. The mouth of the horse is so sensitive that the least movement or the slightest impression which it receives warns and regulates the motion of the animal. But to preserve the full delicacy of this organ, it is highly necessary to treat tenderly its extreme sensibility.

The position of the teeth in the jaw of the horse affords to man the facility which exists of placing a bit in its mouth, by which instrument this high-spirited and vigorous animal is broken in and guided. Let us, therefore, in the first place, study the arrangement of its mouth.

There are in each jaw six incisors, or fore-teeth, followed on either side by a tush, which is generally deficient in mares, especially in the lower jaw. Next comes a series of six grinders on each side in both jaws; these teeth have a square crown, marked with four crescents, formed by the *lamina* of enamel which are embedded on them. Between the tushes and the grinders there is a considerable space called the *bar*, which corresponds to the angle of the lips; and it is in this interval that the bit is placed.

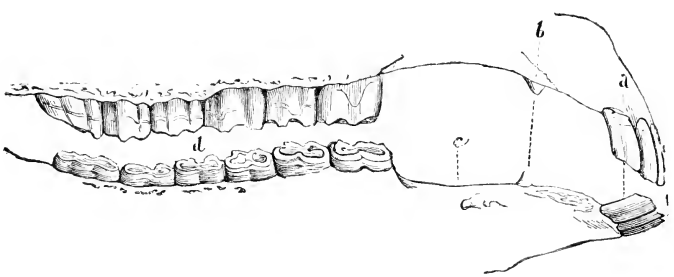


Fig. 1.—Dentition of the Adult Horse.
a, Incisors. *b*, Tushes or Canines. *c*, Interval called the Bar. *d*, Molars.

It is also by means of the teeth that we are enabled to know a horse's age—a knowledge which is of the highest utility; for a horse increases in value in proportion as he approaches maturity, again decreasing in worth as he becomes older. Up to nine years the age can be determined pretty accurately by means of the changes which take place in the teeth.

The foal, at its birth, is usually devoid of teeth in the front of the mouth, and has only two grinders on each side in each jaw (Fig. 2). At the end of a few days, the two middle fore-teeth, or *pincers*, make their appearance. In the course of the first month a third grinder shows itself, and in four months more the two next fore-teeth also emerge; within six and a half or eight months the side incisives, or *corner teeth*, show, and also a fourth grinder. At this period the first dentition is complete. The

changes which take place up to the age of three years depend only on the fore-teeth being worn away more or less, and the black hollows being obliterated gradually by contact with food. In thirteen to sixteen months the cavities on the surface of the *pincers* are effaced; they are then said to be *razed*. In sixteen to twenty months the intermediate fore-teeth are likewise *razed*, and in twenty to twenty-four months the same thing takes place with the *corner teeth*.

Fig. 2.—At eighteen days.

Fig. 3.—At three years.

The second dentition commences at the age of two and a half or three years (Fig. 3). The milk-teeth may be recognized by their shortness, their whiteness, and the construction round their base, called the *neck* of the tooth. The teeth which replace them have no neck, and are much larger. The *pincers* are the first to fall out and be replaced by new ones. At the age of from three years and a half to four years the intermediate fore-teeth experience the same change, and the lower tushes begin to make their appearance. The *corner teeth* are also renewed when between four and a half to five years; the upper tushes likewise pierce the gums, and about the same date the sixth grinder shows itself.

A depression, or small hollow, may be noticed on the surface of the crown of the second growth of fore-teeth, just as in the milk-teeth, and these hollows are gradually worn away in the same fashion.

The *pincers* of the lower jaw lose their cavities when the horse is five or six years old; the intermediate fore-teeth are the next to *raze*. The marks in the *corner teeth* are obliterated at the age of seven or eight years. The process of destruction of the marks in the upper fore-teeth goes on in the same order, but more tardily. (Figs 4 and 5).

Fig. 4.—Six years.

Fig. 5.—Nine years.

When all these various changes have taken place, the horse is looked upon as *aged* (Fig. 7), because the teeth no longer furnish any certain indications as to the age of the animal. Only approximate inferences can now be drawn from the length and colour of the tusks, which become more and more bare and projecting from the gum, &c.

The domestication of the horse appears to date back to the very earliest period of his appearance on earth; and as this animal adapts itself to every necessity, every want, and every climate, its subjection has resulted in a considerable number of races, distinguished by more or less prominent characteristics of shape, strength, temper, and endurance. Although generally intelligent, affectionate, and endowed with considerable powers of memory, these qualities in the horse are essentially modified by education and climate. And for the full development of his intelligence and his high qualities, it is requisite that man should be his companion and his friend, as well as

his master, but never his tyrant. Under the whip of an unfeeling driver, the horse becomes brutalized, and rapidly degenerates, morally even more than physically.

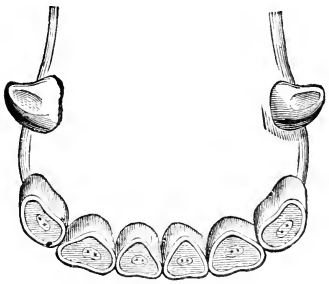


Fig. 6.—Fifteen years.

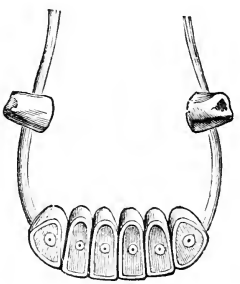


Fig. 7.—Thirty years.

The attachment of the horse for those who treat it kindly is a well-known fact.

The influence of memory on the horse is shown by the sense it retains of injuries and ill-treatment it has suffered. Many a horse is restive with persons who have misused it, while perfectly docile with others, proving a consciousness of good and evil, and a natural insubordination against tyranny and injustice.

CHAPTER II.

PRESENT VARIETIES OF THE HORSE.

Arab—Barb—Dongola—Persian—Turkoman—Cossack—Turkish—East Indian and Australian—Belgian and Dutch—Norman—Spanish—American—Canadian—English thorough-bred—Cart—Shire Horse—Clydesdale—Coach—Cavalry—Galloway—Shetland.

THE Arabian is still one of the most distinct varieties of this noble animal, and also one of the most prized, being eagerly sought for by Turks and Christians in Asia,

Southern Russia, India, and even in Australia. In his native deserts he is still sometimes to be seen in a half-wild state, though most probably owned by some of the "dwellers in tents" peculiar to that region. But it is the more domestic breed with which we have chiefly to do, and which is carefully preserved in a pure state by the chiefs of the various tribes, though it is supposed not so free from stain now as was formerly the case. The head of the Arab is the most beautiful model in nature, giving the idea of courage, tempered with docility and submission to man, better than any other animal, and even more so than the dog. It is seldom, perhaps, that so beautiful a frame exists; but examples are not wanting of such a union of elegance with perfectly good and useful points. The length and muscularity of the fore-arm are also remarkable, and the setting on of the tail is peculiarly high —points which have generally been transmitted to our thorough-bred horses descended from Arabian blood. Many imported horses of this breed are exceedingly wicked and full of tricks, but in India, as a rule, he is quite the reverse. To the modern sportsman also he is valuable, because he faces the elephant and the tiger better than any other breed. In height he is generally a little under fifteen hands; and in colour either bay, black, or grey. It is said that there are three distinct breeds of Arabians even now—the *Attechi*, a very superior breed; the *Kadischi*, mixed with these, and of little value; and the *Kochlani*, highly prized, and very difficult to procure. If this is true, it may account for the very different results produced by breeding from modern Arabs and those introduced in the eighteenth century.

The Arab of pure blood is pre-eminent for symmetry and graceful action, being the main source of improvement which now marks the English Thoroughbreds. The head is conspicuous for its width of forehead, evenly hollowed face, fine muzzle, and width of jaws. The eyes are prominent and lustrous, yet soft and intelligent in expression; the ear is small, well set and active; the neck is gracefully arched; the shoulder is muscular and proportionately oblique; the withers are thin and

moderately high; and the posterior ribs are deep, but the girth appears somewhat light. The croup is high, and the tail forms a graceful arch. The hips are muscular but not heavy, being rounded and well set on to the back. The extremities are full of bone for so light an animal, the tendons and suspensory ligaments being especially well developed. The hocks and knees are large, well formed, and possess a remarkable range and freedom of action; and the feet are small, being covered by sound firm horn, which enables them to endure more severe strain and concussion than is possible to the ordinary English-bred horse. The constitution is strong, and under good management life is greatly prolonged.

It is said that in the early experience of horse breeders the direct cross between the Arab and the mare of the early English breeds proved too slow for racing purposes. This was greatly overcome by using mares, the produce of Spanish sires, which, being afterwards served by Barb or Arab stallions, produced the breed so highly valued at this day.

The **Barb** is an African horse, of smaller size but coarser make than the Arabian, and evidently fed upon more nutritious food. As his name implies, his native land is Barbary; but there is always great doubt about the particular breed to which imported horses belong, because they are carried considerable distances from their native plains, and are also even then much mixed in blood. It has frequently been said that the Barb is the progenitor of one root of our best English stock, and that the Godolphin Arabian, as he was called, belonged to this blood; but the disputed point cannot possibly be settled, and there seems only one argument in favour of the supposition, founded upon his enormously high crest; while his superior size, being 15 hands high, argues just as strongly in favour of Arab descent. But the Spanish horse is no doubt descended from the Barb, this breed having been carried into Spain by the Moors when they overran the country; and, as the appearance of the Spanish horse is totally opposed to that of the descendants of Godolphin,

it is a still stronger proof of his Arabian ancestry, or, at all events, an argument against his claim to Barbary as a native clime.

The **Dongola** horse is another African variety, of a much larger size than either the Arab or the Barb, but more leggy. I am not aware that any of this breed have reached this country.

The **Persian** is a small-sized horse, and quite as elegant as the Arabian, but not nearly so enduring.

The **Turkoman,** again, is a larger breed, but without the elegance of form of the Arab and Persian. They are light in the barrel, and leggy, with coarse heads and ewe-necks; yet they are endowed with very stout and lasting qualities, and they are said to travel very long distances without distress. This is only another instance of the oft-quoted adage, "that the horse can go in all forms."

The **Cossack** horses are reared at liberty, and in large herds, and they were long said to be, in consequence of this fact, of unrivalled speed and stoutness; but in the celebrated race run in Russia in 1825, they were easily beaten at all points by an English horse of second-rate powers, carrying also more weight. They are small and rough-looking, yet spirited, and capable of doing all that can be expected from a *pony*.

The **Turkish** horse is supposed to be nearly pure Arab, with a cross of the Persian and Turkoman. He is a very fine, high-spirited, and elegant horse; but, although the English race horse includes in his parentage several Turkish importations, as the Byerly, Helmsley, and Belgrade Turks, it is doubtful whether these were at all similar to the present breeds met with at Constantinople. Indeed, as Turkey in Europe and Turkey in Asia are together spread over a large surface of the Eastern hemisphere, the mere name of Turkish horse does not describe very closely his birth and parentage.

The **East-Indian** and **Australian** horses are of various mixed breeds, some being Arabs, some Persians, and others Turks and Barbs; while others again are of English blood, but these degenerate rapidly, and though serviceable in crossing with the Arabian or the Barb, yet

they cannot long be maintained in their original purity without injury.

The **Belgian** and **Dutch** horses are now imported into this country in considerable numbers, and for slow work are very serviceable. They are, however, most of them too heavy and lumbering for anything but machiners, and even in that department they require care not to over-drive them. Most of the horses for our "black work" are from this sort, and many also of the black cavalry horses.

The **Norman** horse, again, is a much more hardy and compact animal, but still slow as compared with our breeds. He is, however, gifted with an excellent constitution, and with legs and feet which will stand rattling to any extent. These horses are generally low and short-legged, as compared with the Belgians.

The **Spanish** horse is much crossed with the Barb, and has the good head and neck of that breed, but coupled with a weak and drooping hind-quarter and a very light middle-piece. The shoulders and legs are, however, good; and he is more useful than his look would warrant an Englishman in believing possible, when comparing him with English horses.

The **American** and **Canadian** breeds vary a great deal, and are made up of the original Spanish stock crossed with English, Arabian, and Barb importations. Climate, however, has done much for them; and they have all the wiriness of frame and elasticity of muscle which their masters possess. As trotters they are unrivalled, and in endurance stand very high; but they are not remarkable for beauty, though not showing any peculiarly unsightly points. Some of our best horses have been exported to America, especially to Virginia, where Tranby, Priam, and many others have done good service. The importers to that country have always been careful to select *sound* as well as stout blood, and have not hesitated to invest large sums in order to procure it.

The **English Thorough-bred.** We are indebted to the Stuarts for the first great improvement made in the breed of our horses. James I. and Charles I. having intro-

duced the Arabian blood, and Charles II. laying the foundation of our present breeds by importing several mares (ealled Royal Mares, from their master), to which may be traced the celebrated horses of the latter end of the last century, and some of our best modern breeds. Numerous Eastern horses were also imported at various times.

The **Origin** of the **Thoroughbred Horse**, according to Stonehenge, is as follows:—1. Native mares bred from Spanish strains, probably descended from Morocco Barbs. 2. Markham's Arabian. 3. Place's White Turk, an ancestor of Matchem. 4. Three Turks imported about 1684; and 5. The Royal Mares of Charles the Second.

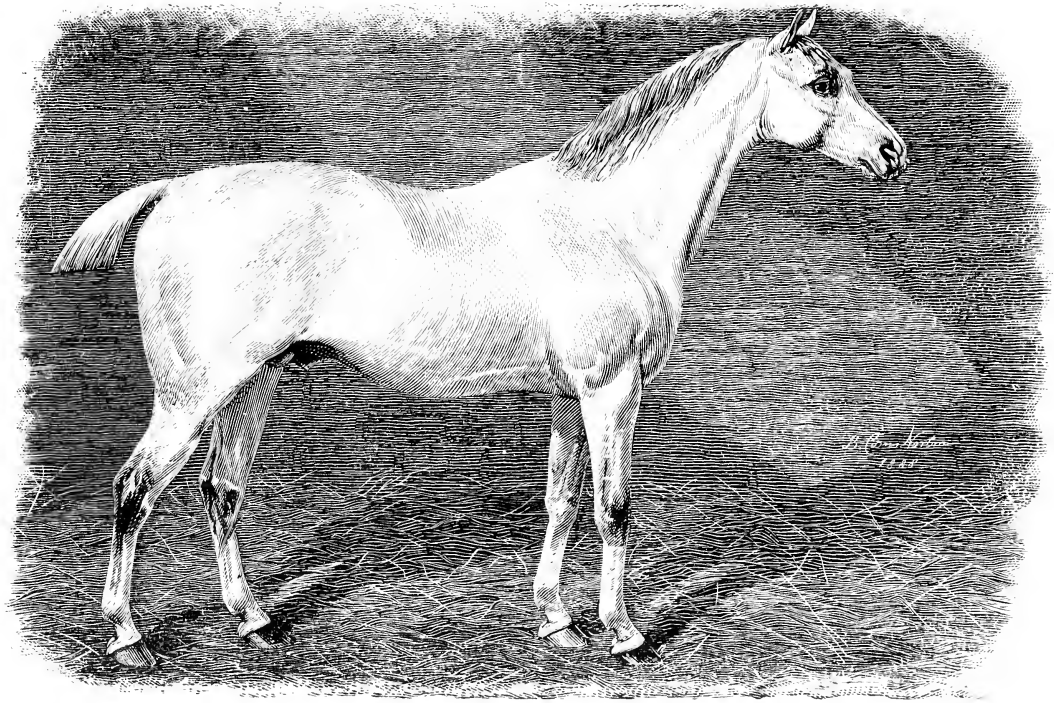
By reference to the early pedigrees we are informed that other horses and mares were introduced, viz.:—Alcock's Barb, Morocco Barb, D'Arcy's Yellow Turk, White D'Arcy Turk, Leeds Arab, Brownlow Arab, Harper's Arab, Pullen's Chesnut Arab, Honeywood's White Arab, Old Bald Peg Arab, and the Arab sire of Makeless, amongst which the D'Arcy Turks were conspicuous.

The greatest results of the use of Arab and Turkish blood appears to have been evident during the years 1748 to 1764, when the following celebrated horses were foaled, viz.:—Matchem, 1748; King Herod, 1758; and Eclipse, 1764. In their wake followed Melbourne, Touchstone, Bay Middleton, and others, all of which, as shown by the pedigrees, possess the strain of both Arab and Turkish blood through the line of sire and dam in each instance.

The **Thoroughbred** horse is intended for racing only.—The *height* of the race-horse varies from 15 hands to 16½ hands, or even 17 hands; but the general height of our best horses is about 15 hands 3 inches. Few first-class performers have exceeded the height of Surplice, who was 16 hands 1 inch, as were also Wild Dayrell and Stockwell. Sir Tatton Sykes was 15½ hands; and between his height and that of Surplice may be ranged every great winner for the last ten or twelve years. This average,

therefore, may fairly be laid down as the best height for the race horse, though it cannot be denied that for some small and confined courses—as, for instance, that of Chester—a smaller horse of little more than 15 hands height has a better chance, as being more capable of turning round the constantly recurring angles or bends.

The *head* and *neck* should be characterized by *lightness*, which is essential to this department. Whatever is unnecesssary is so much dead weight, and we know the effect of 7 lb. in impeding the horse over a distance of ground. Now 7 lb. are easily bestowed upon a neck which may differ in at least 20 or 30 lb. between the two extremes of lightness and excessive weight. Thus, it may be considered as indubitable that whatever is met with in the head and neck, which is not necessary for the peculiar purposes of the race horse, is so much weight thrown away, and yet it must be carried by the horse. Such is the general character of this part; but, in detail, the *head* should be lean about the jaw, yet with a full development of forehead, which should be convex and wide, so as to contain within the skull a good volume of brain. Supposing this fulness to exist, all the rest of the head may be as fine as possible; the jaws being reduced to a fine muzzle, with a slight hollowing out in front, but with a width between the two sides of the lower jaw where it joins the neck, so as to allow plenty of room for the top of the windpipe when the neck is bent. The ears should be pricked and fine, but not too short; eyes full and spirited; nostrils large, and capable of being well dilated when at full speed, which is easily tested by the gallop, after which they ought to stand out firmly, and so as to show the internal lining fully. The *neck* should be muscular and yet light; the windpipe loose and separate from the neck—that is, not too tightly bound down by the *fascia*, or membrane of the neck. The crest should be thin and wiry, not thick and loaded, as is often seen in coarse stallions, or even in some mares. Between the two extremes of the ewe-neck and its opposite there are many degrees, but for racing purposes I should prefer, of the two, the former to the latter; for few horses can go well with their necks bent so as to draw the chin to the



THOROUGH-BRED GREY STALLION, "SCOT GUARD," by STRATHCONAN out of REVEILLE by RATAPLAN. Awarded First Prize at Norwich. Several Medals, and about £1,000 in Stakes. Proprietors the COMPTON STUD COMPANY.
(From an engraving in Volume II. of the Hunter's Improvement Society's Record of Hunter Mares and Sires.)

bosom; but here, as in most other cases, the happy medium is to be desired.

The *body*, or *middle-piece*, should be moderately long, and not too much confined between the last rib and the hip-bone. So long as the last or back-ribs are deep, it is not of so much importance that they should be closely connected to the hip-bone, for such a shape shortens the stride; and though it enables the horse to carry great weight, yet it prevents him from attaining a high rate of speed. The *back* itself should be muscular, and the hips so wide as to allow of a good development of the muscular department. The *withers* may rise gently, but not too high, with that thin razor-like elevation which many people call a good shoulder, but which really has nothing to do with that part, and is only an annoyance to the saddler, who has to prevent its being pinched by the saddle. The *chest* itself should be well developed, but not too wide and deep: no horse can go a distance without a fair "bellows-room;" but, supposing the heart to be sound and of good quality, the amount of lung will suffice which may be contained in a medium-sized chest, and all above that is wasted, and is extra weight. Many of our best winded horses have had medium-sized chests; and some of the very worst have been furnished with room enough for a pair of blacksmith's bellows to play in. If the heart only does its duty well, the lungs can always furnish sufficient air; and we know that when frequently renewed, and with sufficient power, the blood is aërated as fast as it is propelled, and the chief difficulty lies in this power of propulsion, which resides in the heart alone. If the chest be too wide, it materially affects the action of the fore-legs, and therefore, in every point of view, theoretically and practically, there is a happy medium between the too great contraction in this department, and the heavy, wide lumbering chests sometimes seen even in the thorough-bred race horse, especially when reared upon rich succulent herbage, more fitted for the bullock than the Eastern horse. In the formation of the *hips*, the essential point is length and breadth of bone for muscular attachment, and it matters little whether the croup droops a little, or

is pretty straight and level, so that there is a good length from the hip to the haunch-bone; the line between which two points may either be nearly horizontal, or forming a considerable angle with the ground; but still in both cases it should be a long line, and the longer it is the more muscular substance is attached to it, and the greater leverage will the muscles have.

The *fore-quarter*, consisting of the shoulder, upper and lower arm, and leg and foot, should be well set on to the chest; and the shoulder-blade should lie obliquely on the side of that part, with a full development of muscle to move it, and thrust it well forward in the gallop. Obliquity is of the greatest importance, acting as a spring in taking off the shock of the gallop or leap, and also giving a longer attachment to the muscles, and in addition enabling them to act with more leverage upon the arm and leg. It will be seen, by a reference to the skeleton, that the shoulder-blade does not reach the top of the withers, and that those bones forming that part have nothing to do with the shoulder itself; hence, many high-withered horses have bad and weak shoulders, and some very upright ones; whilst, on the other hand, many low-withered horses have very oblique and powerful shoulders, and such as to give great facility and pliability to the fore extremity. The *shoulder* should be very muscular, without being overdone or loaded, and so formed as to play freely in the action of the horse. The point of the shoulder, which is the joint corresponding to the human shoulder, should be free from raggedness, but not too flat; a certain degree of development of the bony parts is desirable, but more than this leads to a defect, and impedes the action of this important part. The *upper arm*, between this joint and the elbow, should be long, and well clothed with muscles: the elbow set on quite straight, and not tied to the chest; the *lower arm* muscular and long; knees broad and strong, with the bony projection behind well developed; legs flat, and showing the suspensory ligament large and free; pasterns long enough without being weak; and the feet sound, and neither too large nor too small, and unattended with any

degree of contraction, which is the bane of the thorough-bred horse.

The *hind-quarter* is the chief agent in propulsion, and is therefore of the utmost consequence in attaining high speed. It is often asserted that the oblique shoulder is the grand requisite in this object, and that it is the part upon which speed mainly depends, and in which it may be said to reside. This is to some extent true, because there can be no doubt that with a loaded shoulder high speed is impracticable; for however powerfully the body may be propelled, yet when the fore-quarter touches the ground, it does not bound off again as smartly as it ought to do, and the pace is consequently slow. For the full action of the hind-quarter two things are necessary, viz.: —first, length and volume of muscle; and secondly, length of leverage upon which that muscle may act. Hence, all the bones comprising the hind-quarter should be long, but the comparative length must vary a good deal, in order that the parts upon which the muscles lie may be long, rather than those connected with the tendons, which are mere ropes, and have no propelling power residing in them, but only transmit that which they derive from the muscles themselves. Thus, the *hips* should be long and wide, and the two upper divisions of the limb—viz., the *stifle* and *lower thigh*—should be long, strong, and fully developed. By this formation the stifle-joint is brought well forward, and there is a considerable angle between these two divisions. The *hock* should be bony and strong, free from gum or spavin, and the point long, and so set on as to be free from weakness at the situation of curb. In examining the hind-quarter to judge of its muscular development, the horse should not be looked at sideways, but his tail should be raised, and it should be ascertained that the muscles of the two limbs meet together below the *anus*, which should be in fact well supported by them, and not left loose, and, as it were, in a deep and flaccid hollow. The outline of the outer part of the thigh should be full, and in ordinary horses the muscle should swell out beyond the level of the point of the hip. This fulness, however, is not often seen to this extent in the thorough-bred horse

until he has arrived at mature age, and is taken out of training. The bones below the hock should be flat and free from adhesions; the ligaments and tendons fully developed, and standing out free from the bone; and the joints well formed and wide, yet without any diseased enlargement; the pasterns should be moderately long and oblique; the bones of good size; and lastly, the feet should correspond with those already alluded to in the anterior extremity.

The *totality* of these points should be in proportion to one another—that is to say, the formation of the horse should be "true." He should not have long well developed hind-quarters, with an upright, weak, or confined fore-quarter. Nor will the converse serve; for however well formed the shoulder may be, the horse will not go well unless he has a similar formation in the propellers. It is of great importance, therefore, that the race horse should have all his various points in true relative development, and that there shall not be the hind-quarter of a long racing-like horse with the thick confined shoulder which would suit a stride less reaching in its nature.

THE COLOUR, SKIN, HAIR, ETC.

The *colour* of the thorough-bred horse is now generally bay, brown, or chestnut, one or other of which will occur in ninety-nine cases out of a hundred. Grey is not common, but sometimes appears, as in the recent case of Chanticleer and some of his stock. Black also occasionally makes its appearance, but not more frequently than grey. Roans, duns, sorrels, &c., are now quite exploded, and the above five colours may be said to complete the list of colours seen on the race-course. Sometimes these colours are mixed with a good deal of white, in the shape of blazes on the face, or white legs and feet; or even both may occur, and the horse may have little more than his body of a brown, bay, or chestnut. Most people, however, prefer the self colour, with as little white as possible; and nothing but the great success of a horse's stock would induce breeders to resort to him if they were largely endowed with white. Grey hairs mixed in the coat, as in

the Venisons, are rather approved of than otherwise; but they do not amount to a roan, in which the grey hairs equal, or even more than that, the other colour mixed with them.

The *texture* of the coat and skin is a great proof of high breeding, and in the absence of the pedigree would be highly regarded; but when that is satisfactory it is of no use descending to the examination of an inferior proof; and therefore, except as a *sign of health*, the skin is seldom considered. In all thorough-bred horses, however, it is thinner, and the hair more silky than in common breeds; and the veins are more apparent under the skin, partly from its thinness, but also from their extra size and number of branches. This network of veins is of importance in allowing the circulation to be carried on during high exertions, when, if the blood could not accumulate in them, it would often choke the deep vessels of the heart and lungs; but by collecting on the surface, great relief is afforded, and the horse is able to maintain such a high and long-continued speed as would be impracticable without their help. Hence, these points are not useful as a mere mark of breed, but as essential to the very purpose for which that breed was established.

The *mane* and *tail* should be silky and not curly, though a slight wave is often seen. A decided curl is almost universally a mark of degradation, and shows a stain in the pedigree as clearly as any sign can do. Here, however, as in other cases, the clear tracing of that all-powerful proof of breeding will upset all reasoning founded upon inferior data. The setting on of the tail is often regarded as of great importance, but it is chiefly with reference to appearances; for the horse is not dependent for action or power upon this appendage. Nor is strength of dock of any value as a sign, and I have known many very stout horses with flaccid and loosely pendent tails.

The various breeds of **Cart** horses are exceeding numerous. Most of our larger and heavier breeds of these animals are crossed with the Flemish horses, and are thereby rendered heavier and more capable of moving heavy weights, which their bulk and readiness to try a

"dead pull" render them well adapted for. These enormous animals are often of more than 17½ hands in height. The Clydesdale, the Cleveland, the Midland Black horse, and the Suffolk Punch are the four most highly prized varieties of this breed, and have now almost completely shouldered out the old English black cart horse, with his coarse head and mean, ungainly appearance. It has been tried, again and again, to cross these four breeds with the Eastern horse, but though in the first cross it has sometimes succeeded from the superior purity of the thorough-bred horse, yet in future crosses the cart blood would show itself; and there has always been a want of endurance, and a tendency to throw out bony matter about the legs in the shape of spavins, ring-bones, and splints.

The Shire Horse.—The history of this animal has been set forth in a most interesting book by Mr. (now Sir) Walter Gilbey. The writer justly pronounces him to be of "the most ancient breed in England . . . whose gigantic proportions and magnificent symmetry are at once the surprise and admiration of all beholders;" * and his investigations lead to the conclusion that the Shire Horse is the direct descendant in the purest line, from what is described by ancient writers as the Great Horse, probably originating in this country, and further known as the War Horse, or the old English Black Horse. Under these appellations he has been variously known for centuries, and in the statutes of Henry VIII. he appears to have acquired the more homely title of the Shire Horse, his sphere of distribution being especially in the rich fen lands of Lincoln, Cambridge, Huntingdon, Northampton, Leicester, Stafford, and thence westward to the Severn. In later days removal has determined his birth and existence in counties north and south of the above-named limits, without serious variation of his typical character, except such as is determined by climate, soil, and food; and each decade has witnessed a greater concentration of interest in breeding and distribution.

* "The Old English War Horse," &c., by Walter Gilbey. London: Vinton & Co. 1888.

The old English Black is principally bred in Leicester, Northampton, and Lincoln, neighbouring counties contributing also, but the most powerful and largest animals, sought after by London brewers, builders, &c., are the produce of the Lincolnshire fens, where they have been preserved almost as a distinct race, a lighter variety of which has been in requisition for mounting our heavy cavalry.

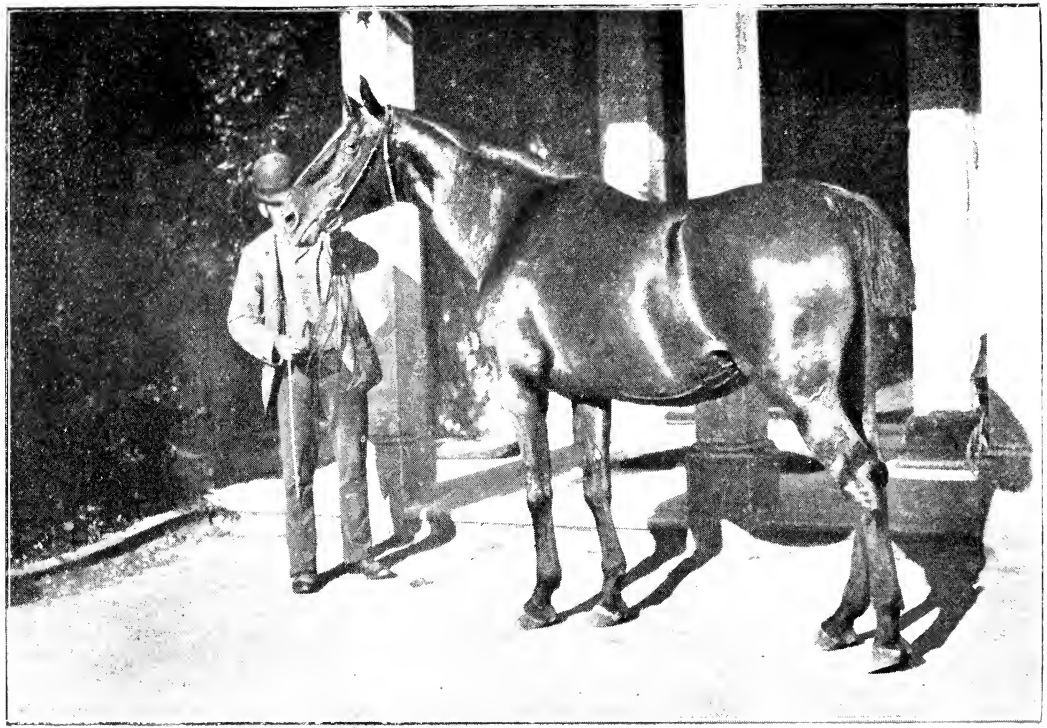
The distinctive marks of the race, which consist of the black colour, the blaze on the face, and more or less of white upon the legs, are generally preserved; but through the numerous crosses, typical animals are to be found of almost all colours. In comparison with their size the head is small, the neck short and heavy, shoulders thick and powerful, body round and deep, and the back with the loins short and broad, massive quarters, the forearms and thighs enormously strong, the legs short and flat, and the hoofs large and round, having well-developed frogs, with moderate arching of the sole.

With such a conformation these animals are naturally slow, but this is not a disqualification. They possess enormous power, and are gifted with a perseverance that enables them to perform wonders in strength not attainable by animals of other breeds, and apparently as well gifted. Many are perfect models of symmetry and power, and an additional high quality is the docility, which under the training of a man devoted to his horse, develops an intelligence rarely exceeded in other breeds.

The Clydesdales are a noble race of animals, deriving their name from the vale of the Clyde, where they are mostly reared. They are sturdy workers in heavy draught, possess a strong constitution, particularly adapted to the northern climate, and are remarkable for general substance, capacious chest and abdomen, muscular limbs, back and loins, broad face, intelligent eye and kindly temperament. When to these are superadded the qualities of the Shire Horse, as seen in the Clydesdales of Seaham Harbour, bred by the Marquess of Londonderry, the results are almost all that can be desired.

Coach horses are either ponies, gig horses, Brougham horses, or coach horses; being gradually larger and heavier from one end to the other of the line, which begins at the size of a small pony and extends up to the carriage horse of 17 hands. Ponies are met with all over England, Ireland, and Scotland, and are of various breeds, some of which are of wonderful powers of endurance, with good symmetry and action, and with never-failing legs and feet. In general soundness they far excel the larger varieties of the horse, for which there is no accounting, as they are much more neglected and frequently very ill-used. A broken-winded pony, or a roarer, is a very uncommon sight, and even a lame one is by no means an every-day occurrence. There is every reason to believe that the Arab blood has been largely diffused among the ponies of our heaths and forests; and their neat heads and great powers of endurance, together with the small size of their bones, would warrant the assumption. Among the Welsh ponies there is a strong cross of the Norman horse, and they have many of them the dark mark down the back which is peculiar to that breed, together with the hardiness of constitution inherent in it. Gigsters of all kinds are the refuse of the hunting stock or of the racing stud, those which are too clumsy and slow for those purposes being put to harness. Some are good trotters and yet bad gallopers, and they are consequently as well fitted for harness work as they are unsuited for hunting. A great number of gigsters are also under-sized carriage horses, which latter are the produce of Cleveland or Clydesdale mares by well-bred or even thorough-bred horses. Until lately the Cleveland mare was almost the sole origin, on the dam's side, of our best carriage horses; but latterly the Clydesdale mare has been very extensively used, and with much better success; inasmuch as the produce are much more hardy, and though, perhaps, not quite so level, yet more blood-like, and their legs and feet much more firm and enduring.

The **Cavalry** horse may be considered under three several heads: first, the charger, or officer's horse; secondly, the heavy trooper; and thirdly, the light trooper. The CHARGER is almost always thorough-bred, or very nearly

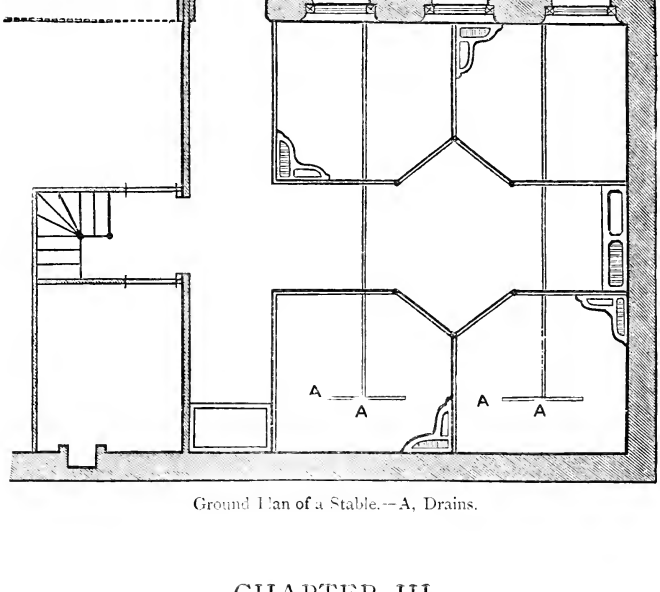


BROOD MARE, "GOODCRAFT" (No. 187 Hunter's Prize Book. Winner of many First and other Prizes and Medals. Champion at Horsington, 189-, beating 110 mares. The Property of the COMPTON STUD COMPANY.

so, and is a horse bred for racing, but too slow for that purpose, yet with a fine form and good action, which are required for the *manége*. He must have good shoulders, so as to be able to use his fore-legs; and his hind quarters should be so formed as to give complete command of the whole weight which he carries; in other words, he must be well upon his haunches. Most chargers are at least 16 hands high, and some still higher. The HEAVY TROOP HORSE is a discarded hunter, that is, a horse bred for that purpose, but considered too heavy to gallop the pace which is wanted. He is therefore sold at troop-horse price, which in time of peace was £24, now somewhat raised. The household troops are mounted on black horses, some of which are bred expressly for the regiments by Yorkshire breeders, and others imported from Belgium. The LIGHT TROOP HORSES are obtained from all sources, and many of them now, as might be expected from the price, are very wooden and inferior animals. The sum devoted to the purpose will not procure a good serviceable animal, coupled with tolerably good looks; and as this latter quality is sought for by colonels of regiments, utility is too often sacrificed to it. Very few of these horses are up to more than 14 st., and yet they have to carry 18 st., so that it is no wonder that in actual service they break down.

The **Galloway** is a breed which is much encouraged by the Welsh farmers, and in other districts where the grass is of a poor quality, and will not suit larger and less hardy horses. It is serviceable for all general purposes, but seldom very fast on the gallop. These animals are said to be descended from Norman blood, a stallion of that breed having been much used among them in Wales some years ago. They are hardy and safe, but somewhat obstinate and unruly. The north-country galloways are scarcely so good in their shoulders, but they have more speed in the gallop, and make better covert hacks in consequence.

The **Shetland Pony** is the least of the species in this country, and often under 11 hands. These ponies are very quick and active, and will walk, canter, and gallop, with good action, but seldom trot well.



Ground Plan of a Stable.—A, Drains.

CHAPTER III.

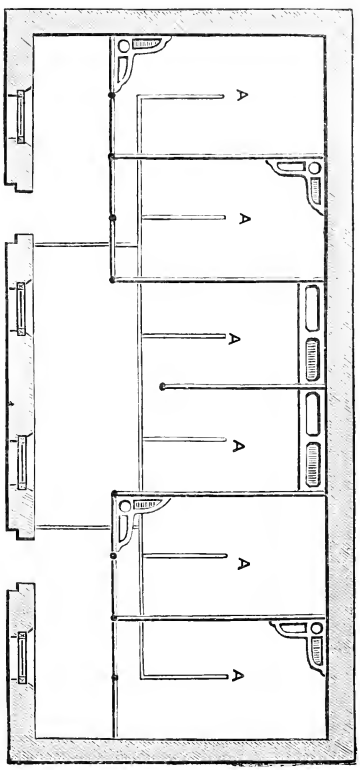
THE STABLE-YARD AND ITS OCCUPANTS.

The Stable—Aspect—Drainage—Sewers—Rain-water drains—Buildings—Materials—Plans—Ventilation—Paving—Partitions—Mangers—Harness-room—Hay-loft and corn-chamber—Stable utensils—Clothing.

Of all animals destined for the use of man the horse is the most useful and profitable, as he is the most noble, generous, and patient—conducing most to our profit, pleasure, and sport, notwithstanding the abuse, ill-treatment, and over-work to which he is subjected by the thoughtless, the ignorant, and cruel. Thanks to the Society for the Prevention of Cruelty to Animals, and the highly advanced state of civilization in this country, much is daily being done to better and improve the condition of the horse and of all other animals: still, very much remains to be done. It is, therefore, both the duty and interest of every man possessing a horse to see that he is properly stabled, care-

fully groomed, fed, and shod; and that he purchases one suitable and fitted for the work required of him.

Stable.—Every one will prefer to have the stables near his house, if not on his own premises; in either case, if they are already built, he must do the best he can with them. Old buildings are for the most part very defective, badly drained, and badly ventilated. This must at once be remedied, and may generally be done at a moderate expense, which will be amply repaid by the improved health and comfort of the horses. New stables are better, but they also frequently require alteration.



Ground Plan of Stable.—A, Drains.

For the guidance and assistance of those proposing to build their own stables, subjoined are some plain, useful remarks on the building, draining, and ventilating, and also some plans for the arrangement of the stalls and boxes, and designs for stable fittings, selected from the catalogue of the St. Pancras Ironworks Company, where fittings and articles of stable furniture will be found, both for quality and moderate charges, equal to any in London. These plans can be varied and enlarged according to circumstances.

ASPECT.—When about to build a stable, the first consideration will naturally be the selection of a site. We need not insist on the advantages of a southerly aspect: they are almost self-evident. The stables will be much more cheerful, and much warmer, and enable the groom to avail himself of every gleam of sunshine to open the windows and thoroughly ventilate the interior.

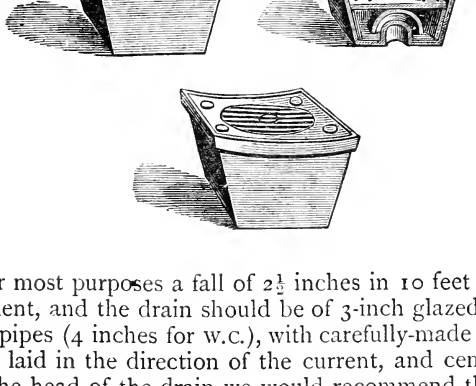
Unfortunately it is not always possible, from the disposition of the ground and premises, to manage this. However, let it be borne in mind that such is the best, the west the next best, and the north-east the very worst.

It should not be forgotten, also, that a thorough drainage is one of the most important points, and every natural slope of the land should be taken advantage of in this respect.

DRAINAGE.—Having settled the site and the plans of the stables, to which we will refer further on, the first works to be provided for will be the drainage, for these will have to be carried out simultaneously with the foundations. The drains will be of two sorts, which should be kept as far away from one another as it is possible to manage: first, those connected with the drainage of the interior of the stables; second, those intended to carry away the surface water and collect the rain-water from the roofs, &c.

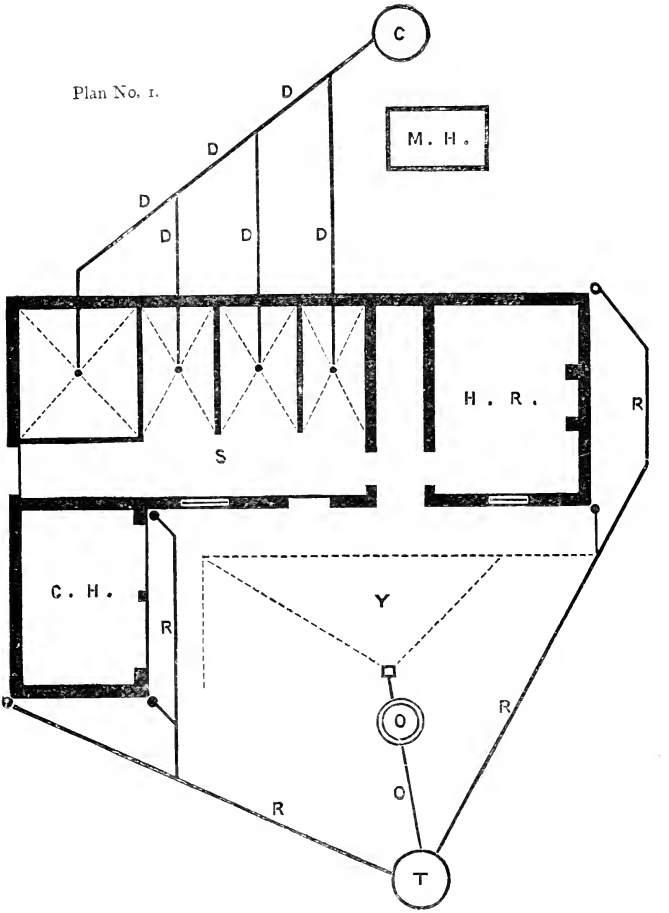
SEWERS.—There are four conditions which are to be regarded as indispensable in the construction of all drains from all buildings whatsoever. These conditions are: Firstly, that the entire length of drain is to be constructed and maintained with *sufficient declivity* towards the discharge into the cesspool, to enable the average proportion

and quantity of liquid and solid matters committed to it to maintain a *constant* and *uninterrupted motion*, so that stagnation shall never occur. Secondly, that the entire length of the drain is to be constructed and maintained in a condition of *complete impermeability*, so that no portion of the matters put into it shall accidentally escape from it. Thirdly, that the head of the drain shall be so efficiently trapped that no gaseous or volatile properties or products can possibly arise from its contents. And, fourthly, that the low extremity of the drain or point of communication with the cesspool shall be so completely and durably formed, that no interruption to the flow of the drainage or escape shall there take place, and that no facility shall be offered for the upward progress of the sewage in case of the cesspool becoming surcharged.



For most purposes a fall of $2\frac{1}{2}$ inches in 10 feet will be sufficient, and the drain should be of 3-inch glazed stoneware pipes (4 inches for W.C.), with carefully-made socket-joints laid in the direction of the current, and cemented. For the head of the drain we would recommend the bell-trapped horse-pots, which are to be had at all stable furnishing ironmongers, taking care that they are sufficiently large and of good strong quality.

The cesspool for sewage should be well away from the tank provided for the reception of the rain-water, and well



puddled with clay on the outside and cemented inside. Precaution should also be further taken that all sewage drains should be laid below the rain-water drains, so that

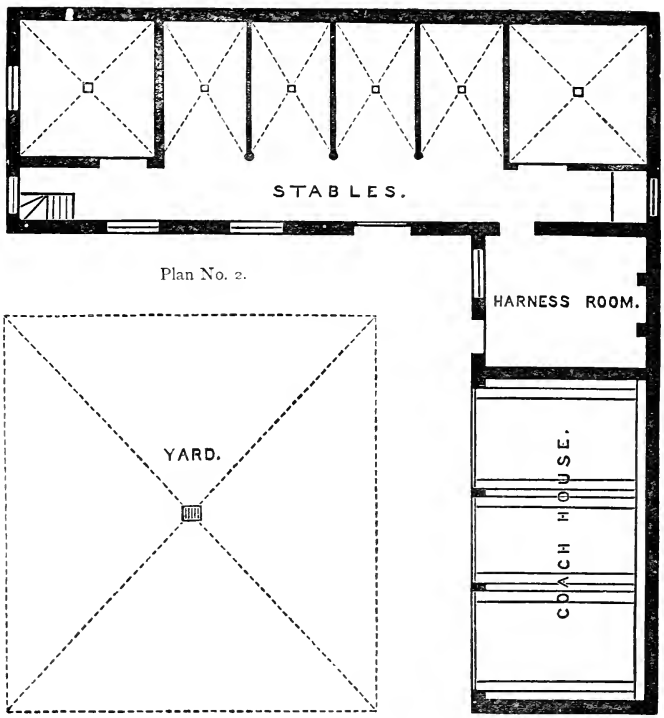
in case of any accidental defects, no matter will, by any possibility, taint the water supply. (See Plan No. 1.)

RAIN-WATER DRAINS.—These will subdivide themselves into two: those laid to collect the drainage of yard &c., and which may be common pipes laid dry, and leading to an ordinary cesspool made of bricks laid without mortar, where the water will collect and gradually lose itself; the others connected with the down pipes from roofs, and leading to a rain-water tank. These should be laid with the same care as the sewer drains: the tank constructed in the same way, with an overflow pipe to lead to cesspool just mentioned.

BUILDINGS.—Having determined upon the site for the stables, the next point to study will be the general arrangement of the plan, and the materials for construction.

MATERIALS.—As to the materials, economy will dictate that preference should be given to those supplied by the immediate neighbourhood; and we should advise that, where a professional architect is not employed, the builder be required to make a drawing and a specification of the works which he will perform for the named price. Also, that all the requirements should as much as possible be foreseen, so that afterwards no alterations be made in the building, as otherwise it will be impossible to determine the limit of the cost. Should the estimated price come to a higher sum than was anticipated, we should not recommend to attempt to get the builder to take something off the amount, as he will only do so by scamping the work; but, premising that he is a respectable and well-recommended man, we should advise that the extent of the building be reduced in preference to the quality of the work. Cheap work and cheap materials are always the dearest in the end.

PLANS.—The plan of the building will vary very much according to the aspect, disposition of land and other premises, and other local circumstances. These should be very carefully studied, and the plans well matured, as the success of the building will greatly depend on the disposition of its various parts. We will lay down as one of the first principles, that no stall should be less than 6 ft.



Plan No. 2.

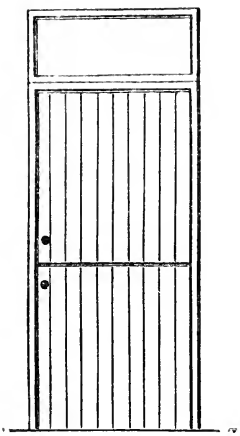
wide by 10 ft. long, no loose box less than 10 ft. square, and no stable less than 10 ft. high from floor to ceiling. Passage in rear of stalls 5 ft. wide.

Such arrangement as will put all the horses' heads the same way, with the light and ventilation behind them, will be the most preferable, as enabling the doors and windows to be opened without placing the horses in a draught. (See Plan No. 2.)

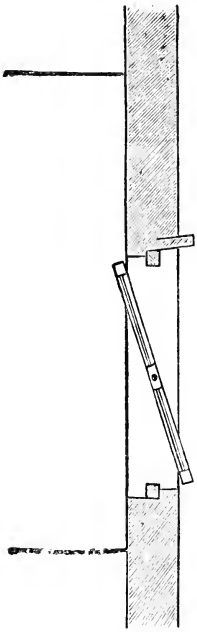
The doors should be wide and high, and hung in two heights, with fanlight over (4 ft. by 7 ft. at least), that the horses may go in and out freely without a chance

HUNTER, "FIRELIGHT." 2 years old, ch. g. Sire Ruddigore.
The Property of Mr. THOMAS B. C. WEST, Wantage. Winner of many Prizes.

of knocking themselves about. One often sees a horse hesitating before entering a stable; and when, after a little



Door.

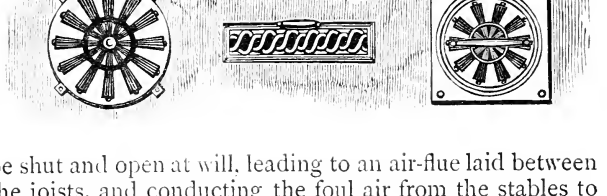


Sash.

coaxing, he is persuaded to come on, he will do so with a rush. Such a horse has, no doubt, at some time or other, hurt himself when passing through a door either too narrow or too low.

The light should be full, as tending greatly to the cheerfulness of the interior. It is also well known that horses suffer in health when deprived of light, Nature's purifier. Dark stables favour the accumulation of dirt, which by constant putrefactive process gives off deleterious gases. The sashes, also, should be hung on centres in their height, as the most advantageous method for ventilation.

VENTILATION.—To complete the ventilation, the only further requirements will be an opening in the ceiling—not immediately over the horses, but in the rear over the passage,—fitted with an ornamental ventilating grating, to



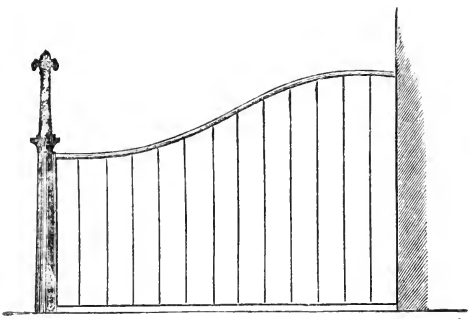
be shut and open at will, leading to an air-flue laid between the joists, and conducting the foul air from the stables to the outside through an ornamental perforated air brick or iron grating. A similar ventilating grating, to regulate the admission of fresh air, will only be necessary where the doors and windows are small, and fit very accurately.

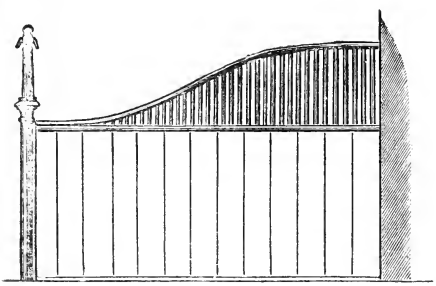
PAVING.—The materials for paving should be of the hardest quality, on good sound ballast or concrete foundation. Any absorbent materials must be rejected—first, because they will not be of sufficient durability; and, secondly, because, from their nature, they will retain part of the manure, and the stables will never be sweet. The paving of boxes and stalls should be laid with a regular gentle slope to the drain, which should always be in the centre. Irrespective of other advantages, the horses stand on the level, and take their rest more comfortably.

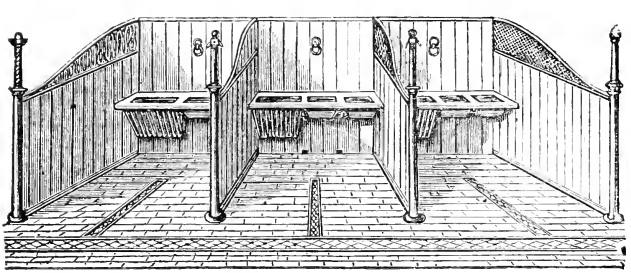
An occasional sprinkling of gypsum (sulphate of lime), when cleaning the stables, will be found to act as a great purifier. Its great affinity for ammonia causes it to absorb a great quantity of the gases generated in the stables, which will thereby lose all their offensive smell; and none of the ammonia will be lost, but will be retained in a condition serviceable as manure.

PARTITIONS.—The partition for stalls will be match-lined both sides, and about 4 ft. 2 in. in rear, with a ramp, and rising to 6 ft. 2 in. towards the mangers; with iron pillar at the end next passage, with rings for pillar reins. Sometimes, also, the match-lining will be carried through

in a level line, and by a cast iron the ramp formed ornamental panel.

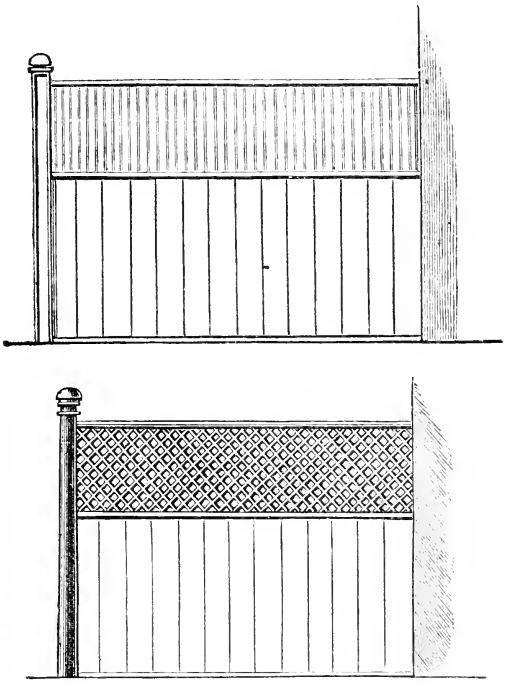






For loose boxes the boarding will be from 5 ft. to about

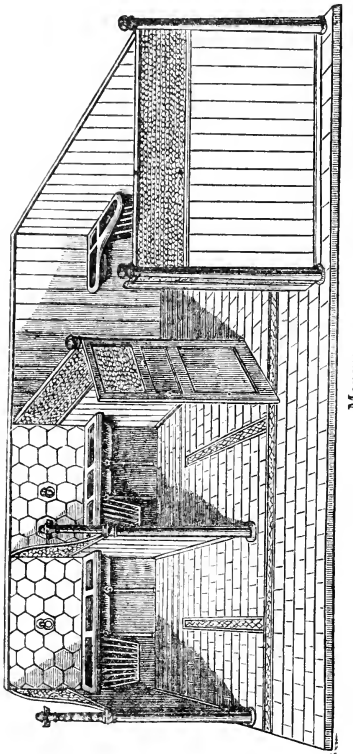
5 ft. 4 in. high at most, with a 2-ft. ornamental iron panelling over.



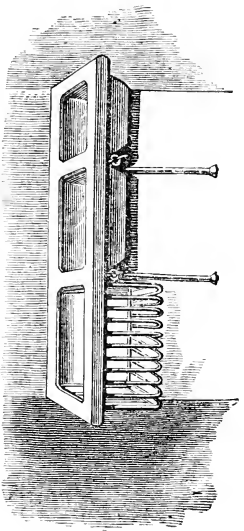
MANGERS.—The best mangers are those containing hay-rack, corn-manger, and water-trough in one, as per sketch; and we more specially recommend that preference should be given to galvanized iron.

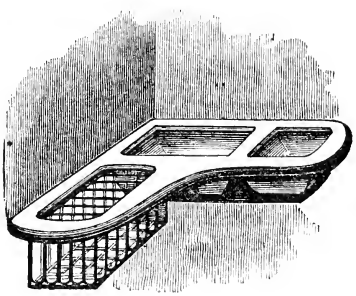
The wall over the manger should be match-boarded to the height of partitions, and lined with iron hoop bands, sheet zinc over the joints of match-lining, or enamelled tiles, to prevent horses biting at it when being cleaned.

The manger will have two rings for halter reins, and a ring and galvanized chain fitted in wall over same.



Mangers.





HARNESS-ROOM.—This should be at least 10 ft. square, and have in it a fireplace fitted with range with boiler attached. A handy supply of hot water will be found most advantageous in the management of the stables, and we need not point out the necessity of a fire for drying the rugs, horse-cloths, saddles, harness, &c., in winter-time.

This room should be fitted with convenient hooks and brackets for the hanging and cleaning of harness. These are of all sorts of designs, in which individual taste will be the best guide.

HAY-LOFT AND CORN-CHAMBER.—In most stables, in addition to the coachman's rooms, there is a corn-chamber and hay-loft over the stable. The former is generally boarded off, lined all round with sheets of zinc or tin to keep out the vermin, and the door is provided with a lock, of which the coachman keeps the key, and gives out at stated times the corn for so many horses for so many days. By this means he keeps a check upon the consumption, and prevents waste and pilfering; both of which are more likely to occur when the supply is unlimited and easy of access. When there is not a regular corn-chamber, one must either be made or a large bin provided, and the oats bought from the corn-chandler as required, in quantities of two or three quarters at a time, as many as the bin will contain, which will be found a more expensive proceeding. Hay, from being bulky, is almost invariably stowed away in the loft, which should hold at least half a load; it must be stored away carefully, and nothing allowed to run about or play on it. Hay will keep good and sweet for some time, if in a dry place and not meddled with. If the loft be large enough, it will be found better and cheaper to buy a load at a time; if not, or the loft be damp, a smaller quantity must suffice.

STABLE UTENSILS.—Under this head is included all that is used in dressing the horse, and in cleansing the yard and stable.

The pitchfork is used to shake up the straw, of which the horses' bed is made; to remove all that becomes soiled and dirty; and, in general, to set it fair and straight.

The handle should be kept clean, and the prongs bright. Price 2*s.*

The shovel removes the smaller particles, and the scrapings of the stable-yard. Price 2*s.* 6*d.*

The besom, or *broom*, is used to sweep out the stable after the damp soiled litter has been removed, and to keep the yard neat and clean. Those made of birch are the best, and are bought at about 9*s.* a dozen, according to the quality and locality.

A manure basket to take up the droppings. This should be done before trodden about, to keep the straw clean, and the stable sweet. Price 2*s.*

The stable pail should be made of strong oak, bound with iron, and neatly painted. Cost, from 5*s.* to 6*s.* each.

A sieve, to cleanse the oats and chaff of all dust and small stones. Price 2*s.* 6*d.*

A quartern and a *half-quartern measure*, to measure out the oats, beans, chaff, &c., for each horse's feed. About 1*s.* 6*d.* each.

The currycomb.—Horses of the present day are so much better bred than formerly, consequently their coats and skin are so much finer, there is now much less use for the currycomb, except to remove the dust from the body-brush. On very rough-coated horses it may occasionally be used, but no other should ever be touched with it. In summer it is absolutely unnecessary, and in these days of clipping and singeing, in the winter it is almost equally so. It must always be used lightly, or it will severely punish the horse, and on no account should the teeth be sharp, or more than $\frac{1}{8}$ in. in length. Price 1*s.* 6*d.*

The body-brush, or horse-brush as it is sometimes called, is, in the hands of a good groom, the most useful implement used in dressing the horse, as it thoroughly removes all dust and dirt, stimulates the skin, and imparts a gloss to the coat. Cost, about 5*s.*

The water-brush is to wash all dirt and mud from the feet and legs of the horse, and stains from his quarters, &c. Price 4*s.*

The mane-comb, as the name implies, is to comb the mane and tail. It should be made of horn, have large

teeth, and be used carefully and only occasionally, as in a general way a good brushing will answer the purpose without pulling out the hair. Cost, 1*s.*

The picker is a blunt iron hook for removing the grit and stones from the horse's feet. Some are made to fold up for the pocket. A good careful groom will always carry one of these. Price 1*s.* 6*d.*

A sponge, too, is always necessary to dry the legs, &c., after washing, and for other purposes of cleanliness. Price varies according to place and quality.

Leathers and *rubbers* are also indispensable for drying the horse after work, and wiping him over after dressing.

An oil-brush, and *tin* to hold the oil, to rub round the hoofs before leaving the stable to go to work.

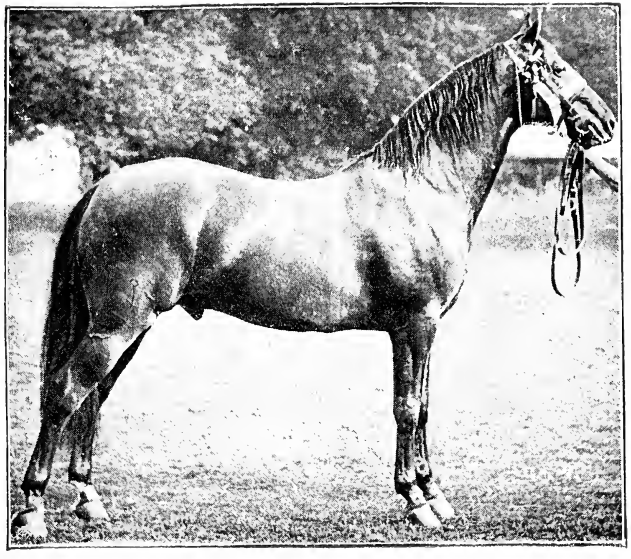
A *singeing apparatus* and *trimming scissors* are necessary. That suitable for using gas costs about 35*s.*, for burning paraffin, about 10*s.*, scissors 5*s.*

To avoid loss and confusion, there should be a place for everything, and everything in its place, and all the utensils should be kept bright and clean.

CLOTHING, &c.—Every horse standing in a stable must have a head-collar, with two reins long enough to go through the two rings fastened to the manger, and to reach the ground after being each attached to a weight or block made of hard wood or iron, heavy enough to keep the reins from twisting or curling up, but not so heavy as to be a weight or strain upon the horse's head as he moves it. When in a box, too, a head-collar is always handy on the quietest horse; on a tricky or unruly animal, it is absolutely necessary, as he can then be at any time easily secured without risk or trouble.

Halters.—Two good web-headed hempen halters are also requisite in every stable, to lead the horse about without having to use the head-collar.

Clothing.—There is a great variety of clothing, from the comparatively inexpensive to the most expensive in make and finish. These consist of blankets or rugs of different degrees of warmth and thickness according to the time of year, a roller, a suit of body clothing, and a set of flannel bandages. The best material will be the cheapest in



COACHING STALLION. "SALISBURY." First Prize at Warwick, 1891.
The Property of MR. THOMAS CARR, Kirksmeaton, Pontefract.
(By kind permission of Messrs. Crosby, Lockwood & Co., from Professor Wallace's "Farm Live Stock of Great Britain.")

the end, as wearing so much longer than the cheaper kinds.

The blanket or *rug* should be cut back at the top of the shoulder, with a projecting piece on each side coming round and meeting in the centre of the chest, where they fasten with a buckle and strap. Each rug, too, should be bound with some strong material to prevent the edges tearing out. Two rugs will be found necessary for each horse.

A suit of *body clothing* may be made of various materials, but strong warm serge is best for winter, and a lighter kind for summer wear. It consists of a quarter-piece, hood and breast-piece, with roller to match. The roller must be well padded, to prevent bruising or injury to the back from pressure.

In winter, in a warm stable, a heavy rug and the body clothing will be found sufficient during the day, but at night the latter should be removed to keep it clean, and another rug substituted.

The flannel bandages are put on after the horse has had his legs washed, to keep them dry and warm. They are also of great service in illness, to keep up the circulation and warmth in the extremities. In hunting stables, where the horses must be occasionally sweated, it will be necessary to have two or three spare rugs and hoods in use for that purpose, and which should be carefully washed and dried. The price of clothing varies so much according to the quality and finish, it is difficult to name any, but a respectable saddler will at any time give an estimate for the kind required.

A variety of information on stable routine, &c., will be found in "The Horse-Owner and Stableman's Companion." London and New York: Frederick Warne and Co. Price 1*s*.

CHAPTER IV.

HOW TO PURCHASE A HORSE.

Hack or Riding Horse—The Ladies' Horse—The Hunter—Carriage Horse—Horses for light harness—Horses for heavy harness—Cobs and Ponies—Defects, diseases, and faults to be avoided in all Horses.

To THE inexperienced the purchase of a horse is a matter of some little difficulty and risk, and the object of this book is to throw out some few hints to enable the intending purchaser to ascertain first what sort of a horse he requires (not always an easy task), then the best and safest way to buy him, and the best and most economical way to preserve him in health and condition to perform the duties required of him.

And first I must caution all purchasers against a very common fault—that of wanting and expecting to find perfection in any horse: there is no such thing either in man or horse; all that can be done is to select one as nearly as possible approaching the standard required. As in everything "a little knowledge is a dangerous thing," it is particularly so in all relating to the purchase and management of the horse. The inexperienced purchaser should therefore place himself either in the hands of an experienced friend or respectable dealer, and unless he knows something of an animal previously, be very cautious in purchasing at the sales by auction, or from advertisements, however flatteringly described, and seemingly fair in allowing trials, &c. The great demand for horses, both at home and abroad, during the last few years has raised the price at least fifty per cent., and in some classes to even more than that.

There are several highly respectable dealers in London, and generally one at least in most large towns in the country, to whom an intending purchaser may apply, and who, on his stating the sort of horse he requires, and the purpose for which he requires him, will show him some from which he may make a selection, the dealer guaranteeing the

horses to be sound and quiet to ride or drive, &c. As so much difference of opinion exists as to what constitutes soundness or unsoundness in horses, most dealers of the present day decline to warrant any horse sound, but allow the purchaser to have him examined by any veterinary surgeon he may select, whose certificate that he is sound at the time of purchase exonerates the dealer from all responsibility in that respect. Most horses purchased out of a dealer's stable are fat and short of work, and at first care is requisite that they be used carefully and steadily, and brought to work by degrees, or illness may probably result to the horse and disappointment to the owner; the dealer not unfrequently getting the blame for what arises, not from any fault of his, but from a want of knowledge or care on the part of the owner in too soon putting him to work for which he was not yet fit, and the ill effects of which a little care, a few days' patience, and a mild dose of physic would have prevented.

In his choice of a horse the purchaser will of course be guided by whether he wants one for riding or driving purposes: if for the former, he will be particular that the shoulder lies well back, and if strong, not loaded at the top or points—that he has a good back, deep body, clean, flat, wiry-looking legs, and free from large splints, curbs, spavins, &c.; that his feet are firm and of moderate size—neither large and flat, and therefore necessarily weak, nor strong and narrow like those of a mule. When a horse has natural feet of the latter description they are generally remarkably sound, and will stand a great deal of work; but, as a rule, that shape is produced by internal disease, rendering the horse unsound when put to work.

If for driving purposes, he need not be so particular about the shoulders; for harness they may be stronger, heavier, and more upright, as many make capital harness horses that are, from their formation, very uncomfortable to ride.

Having met with one suitable for his purpose, the purchaser must not let a few pounds prevent him buying him, if rather more than the price to which he had proposed to go. For instance, an intending purchaser limits himself to price, say £70; he sees one the very thing he wants for

a few pounds more, but declines to go beyond his fixed price. He eventually buys one he thinks may suit at about his price; after a time, finding he will not do, he changes him away for another as unlikely to suit him, paying £10 or £15 more, simply to get rid of the first. This again is changed away in his turn, and so on, till at last he finds himself still unsuited, with one that, altogether, after the different changes and payments, costs him nearly double the price of that he declined at first as being beyond his figure.

Horses are for the most part unfit for the London market, and for general use, till they are at least five years old; but a dealer will occasionally buy a good one at four years old, if at a corresponding price. Some men, and often young men, fond of riding, cannot afford to give a high price for a horse for their own use. He has either to put up with an unsound or a blemished one. But if his work is not hard, and he is a pretty fair horseman, he would find it advantageous to buy a good four-years old, and use him gently for a year, when, if all went well, he would have a good horse at a cheaper rate. A man must understand something about horses and their management to do this to advantage.

The Hack, or Riding Horse.

In selecting a riding horse much must depend upon the size and weight of the rider. The best and most useful size is from 15 hands to 15 hands 2 in. The most fashionable colours are bay, brown, and dark chestnut. A really good riding horse, with good action and fine manners, is very difficult to find, as he must be good-looking, well made, sound, and temperate, with breeding substance, action, and courage. His head should be lean, the eye bold and prominent, the muzzle small, with large nostrils. The neck should be good, and slightly arched to bend to the bridle, shoulders lie well back and strong, but not heavy and loaded at the points, the body deep and round, strong back and loin, with good deep quarters and good firm legs and feet. He must ride lightly in hand, walk pleasantly and safely, trot freely, with good action, and canter easily, yielding to the bit without pulling. He

must carry the saddle well back behind the shoulders: nothing is so uncomfortable or looks so badly in any description of riding horse as sitting on the top of the shoulders instead of behind them. The price will vary according to his action, manners, and appearance, as well as the weight he can carry. From £35 or £40 for the light blood hack with low action, to £70 or £80 for good useful sorts, and up to £150 to £200, or even more, for first-class horses of great style and manners, with very grand action. Many horses of this class are very fast, and can trot up to twelve and fourteen miles an hour; but if they do seven or eight miles pleasantly and well, they will be fast enough, as few men care to ride faster.

The great defects to be avoided in purchasing a riding horse are a loose weak neck—horses so formed invariably getting their heads up, and being very uncomfortable to ride; low upright shoulders; and twisted fore-legs—rendering the horse liable to hit either the inside of the knee or fetlock joint, which is very dangerous and likely to cause him to fall. A shy, nervous horse, too, should be avoided, as well as a hot, irritable one. Horses of a light chestnut colour are very often so, and in company will not settle into any pace. Ten miles is a fair average day's work. The expense of keep, shoeing, &c., will average 30*s.* a week for one, but where two or more are kept it will decrease in proportion.

The Ladies' Horse.

A perfect ladies' horse is of all descriptions the most difficult to find. So many good qualities, which, though desirable in all riding horses, may be overlooked in those for men, are here absolutely essential. Fine temper and courage, a light level mouth, and fine manners, are indispensable. He should be from 15 hands to 15 hands 3 in. high, with a good head and neck, fine oblique shoulders, rather long in the body, with a good back and loin, deep strong quarters, firm sound legs and feet. If the hind legs are rather bent, so much the better; he will get them more under him, and consequently his paces will be easier —horses with straight hind legs invariably pitching most

unpleasantly in the canter, which must be easy and elegant. As few ladies ride more than from 10 to 11 st., including a 19 or 20 lb. saddle, and ease and lightness in action are indispensable, the ladies' horse should be very nearly thorough-bred, if not quite so. He must walk well and freely, step lightly but sharply in the trot, with a rather long easy canter. He must be high-couraged and free, but at the same time docile and temperate. A slow, lazy horse is as objectionable and disagreeable to ride as a hot, irritable one. The latter will sometimes go quietly and temperately in the hands of a lady, though irritable and fidgety when ridden by men, owing to the easier, lighter pull on their mouths. From the position of the ladies' seat and from the great length and incumbrance of the habit, it follows they cannot have the same power and control over the horse that men have, and accidents to them are more likely to be attended with dangerous results; hence greater care is necessary in selecting a horse for their use free from all tricks, nervousness, and vice.

Many are called good ladies' horses that have no other recommendation than their being very quiet, which with very many will cover a multitude of faults.

A few years since ladies rode no pace but the walk and canter, but lately the trot has become a favourite and fashionable pace; consequently a safe, sharp, easy trot is now essential in all horses to carry a lady.

The ladies' hunter differs in some respects from the riding horse for the road or park; he may be less showy and stronger. He must be eight or nine years old, have been well and regularly ridden to hounds for at least two or three seasons, and thoroughly understand his business; not less than 15 hands 2 in. or more than 16 hands high, well above the weight he has to carry, well-bred, and fast, but thoroughly quiet and temperate among other horses and at his fences, which he should take freely and cleverly, go well in the bridle without pulling, and turn readily with a motion of the hand.

A hot, irritable, fretful brute, or one with a weak, loose neck is uncomfortable enough for a man to ride, but it is absolutely dangerous to allow any lady to ride such a one

on the road—to say nothing of riding him to hounds—however good he may be represented to be.

The best colours for ladies' horses are bay, brown, dark chestnut, or black. There is an old saying, that "A good horse cannot be a bad colour;" and though no purchaser should decline to buy one that is likely to suit him on account of colour, those I have named are to be preferred.

The price of horses differs so greatly, and depends so much on their make, style, and qualifications, that it is difficult to name an average one; but a good ladies' horse, either for the road or the field, is always worth from £100 to £150.

The Hunter.

In selecting a hunter it is necessary to bear in mind the country in which he is to be ridden. In the grass countries of Leicestershire, Northamptonshire, &c., the hunter must be nearly if not quite thorough-bred: the enclosures being large, the fences strong, and the scent over the grass good, nothing but blood can go the pace and keep on jumping. The reason is this: when going with hounds the thorough-bred is never really extended, but is always going within himself, while the half-bred is going all the time at the top of his pace, and necessarily becomes much sooner exhausted.

In a close country, on the contrary, the half-bred hunter is preferred. The pace is not so fast, and the horse is constantly eased by being pulled up and steadied at the fences; for it is a well-known fact that fences stop hounds more than they do horses. In countries of this description, as Essex, Herts, Surrey, &c., the land is generally ploughed, wet and heavy, the enclosures are smaller, and the fences being principally bank and ditch, must be taken steadily and carefully. I have seen some quite common half-bred horses go remarkably well over a close country that could not live for five minutes over the grass countries.

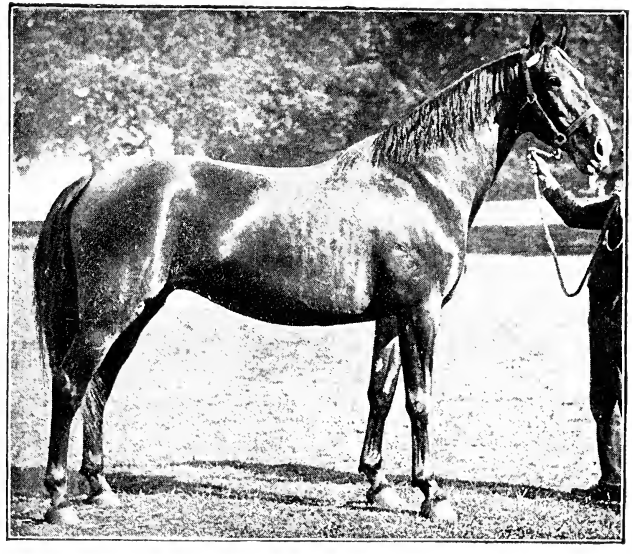
The points essential to a hunter are a lean head and neck, well set on to good oblique shoulders, a strong back and loin, wide hips, a deep body and back ribs, good mus-

cular quarters, and gaskins well let down to the hocks, and clean, firm legs and feet. He must be temperate, with plenty of courage, and have a good mouth and manners. His size will vary from 15 hands 1 in. to 16 hands 2 in., according to the weight he has to carry and the description of country he has to cross. From 15 hands 3 in. to 16 hands 2 in. is perhaps the best size for the flying grass countries, while from 15 hands 1 in. to 15 hands 3 in. will be found better and handier for the close deep country.

The Irish hunter is very much improved of late years. From the importation into Ireland of some of the best-bred English stallions, they have lost a good deal of the mean appearance they formerly had, are better bred and better looking, with deeper and longer quarters. The Irish horse had generally a small neat head, oblique but rather weak shoulders, short back ribs, and mean, drooping quarters—all which has been very much improved, and some very first-class horses are now bred in Ireland. They are generally very clever, particularly good timber-jumpers—better adapted, perhaps, for the close heavy countries than the grass. When honest and good-tempered they are very pleasant to ride, but from often being tricky and shifty, require care in purchasing. The price of the hunter depends very much on his breed, appearance, manners, and ability. For the grass countries it would vary from £100 to £300, and for the close plough countries from £80 to £200.

The amount of work that may be fairly expected of a hunter is one day a week with staghounds and three days a fortnight with foxhounds. From being particularly liable to accidents from blows, thorns, over-reaches, &c., it will generally be found that out of a stud of four, one will be *hors de combat*. The best and hardiest colours are bay, brown, dark chestnut, and black. Light chestnuts are very often hot and irritable, and also bad feeders when put to work. Horses with short back ribs, too, are almost invariably bad feeders.

Hunters go in all forms, but a loose, weak neck and twisted fore-legs are always to be avoided. The former is the most dangerous fault a hunter can have: it is impos-



COACHING MARE, "WATH BELLE." First Prize at Warwick, 1892. The Property of MR. THOMAS RADCLIFFE, Church Aston Manor. *(By kind permission of Messrs. Crosby, Lockwood & Co., from Professor Wallace's "Farm Live Stock of Great Britain.")*

sible to steady him at his fences, or in any way interfere with his mouth, without his at once throwing up his head; consequently he cannot see where he is going, and serious falls are the result. With twisted fore-legs, the horse is liable to hit and cut himself under the knee and on the fetlock joint, resulting in lameness and swelling, even if he do not fall.

The Carriage Horse.

These horses are bred principally in Yorkshire and the North of England; are bought there by the principal dealers and jobmasters at three and four years old, and are broken, driven, and matched by them for some time before they are fit for the carriages of the nobility and gentry. Carriage horses are always either bay or brown; those without white are preferred. They must be fully 16 hands high, with rather long rainbow neck, strong but oblique shoulders, deep round body, with long muscular quarters, carrying a good tail, clean flat legs, and good firm feet. Being kept more for show than work, grand stylish appearance and action are indispensable; and from being generally loaded with flesh, unless the feet and legs are good, they will soon wear out. A pair of well-matched carriage horses, with style and grand action, will fetch a long price, as much as £600 or £700 being sometimes given.

This is easily accounted for if we bear in mind the great expense, trouble, time, and risk that are involved in purchasing, breaking, and perfecting a pair of horses of the size and style required. In fact, so great is the risk and so many the disappointments, that many do not buy horses for their carriage, but prefer hiring them of a respectable jobmaster. But in this, as in all other sorts and descriptions of horses, there are various classes, and the purchaser can suit himself, from the pair of good useful average horses, at about £270, up to almost any price for first-rate style and action.

The great defects to which carriage horses are liable, from their size and general formation, are—defect of the wind, either roaring or whistling, horses with long rainbow

necks very frequently becoming so after a bad cold or an attack of influenza. All large horses, too, are more or less liable to their wind becoming affected after illness. Inflammation of the feet is another common complaint with horses of this class. Loaded with flesh to improve their style and appearance, and with high action in addition to their weight—two great causes of inflammatory attacks—they are very liable to this complaint, unless great care is taken to guard against it. Many carriage horses, too, have flat feet, rendering them doubly liable to an attack of this description; in them the sole of the foot will sink, becoming convex instead of concave. When such is the case, great care is requisite in shoeing, or the horse will not be workably sound.

Some few years since grey was the most fashionable colour for carriage horses, now bays and brown have quite superseded it for all descriptions of horses; and unless he is very first-rate, a grey horse is almost universally objected to.

In hiring or jobbing carriage horses the price per month varies according to the time of year. For the months of May, June, and July, the height of the London season, it would be about £21 or £22 per month for a pair of good-looking, useful horses. For the rest of the year it would vary from £16 to not less than £12 per month, according to the time of year and the value of the horses. If hired by the year, the price would be from £90 to £100 for a pair of horses, and £60 for a single horse. The hirer in all cases to provide fodder, &c., and to pay all expenses, as shoeing, &c., unless a separate agreement is entered into, when the price will be proportionately more.

Horses for Light Harness.

In this class may be included horses suitable for gigs, T-carts, light broughams, dog-carts, &c. They should be well-bred, neck rather long and arched, with good back and quarters, strong oblique shoulders, carry a good head and tail, and be of a generally showy and stylish appearance, with high grand action. Horses of this description

are more fitted for the park and for show than for real work, and command high prices.

For general use horses of a more common description will be preferred—less showy and with less action—the better to stand the wear and tear of the hard roads, and must be selected according to the work required of them. Many of them are very fast, and can trot up to fifteen or sixteen miles an hour. All must have a certain amount of style and action to render them safe and pleasant to drive; but, as a rule, the higher and grander the action, the less useful is the horse for real work—the wear and tear of horses of this class being so great as almost to preclude them from all that can be called "work," and they are suitable only for the park and show.

The most fashionable colours are bay, brown, chestnut, and black. The height will vary from 15 hands to 15 hands 3 in., according to the size and description of carriage he has to draw; and the price will vary from £50 to £150, according to style and action.

The Horse for Heavy Harness.

Horses for this description of work are those that have grown too large and coarse for carriage horses, and are used principally to run in spring vans by railway carriers and others requiring great strength combined with a certain amount of pace, and for which the cart horse is not adapted from being too slow, and from his weight and heavy action liable very soon to shake himself on the road when put beyond a walking pace. Another sort is the common, coarse, half-bred horse, too light for a cart horse, and too plain and heavy for private carriages. These are generally used in omnibuses, for which they are admirably adapted, as, from their size and power, as well as being for the most part active and on short legs, they can draw these heavy machines, often loaded inside and out, at the rate of six miles an hour—which is as fast as the frequent stoppages, the bad foothold on the stones, and the crowded state of our streets will admit.

The height of the former will be from 16 hands to 17

hands; that of the latter from 15 hands 2 in. to 16 hands. Good useful animals of either class will cost from £40 to £50.

Cobs and Ponies.

The cob is a strong little horse, about 14 hands high, and of various descriptions. The better class are bred principally in Norfolk or Lincolnshire. When well-bred and good-looking, with action, they are not only very useful, but very valuable for carrying heavy and elderly men, as, being low, they are easy to get on and off. A good cob must have a good head, a strong but not heavy neck, good oblique and very strong shoulders, not loaded at the top or points, a deep round body, good loin, and strong muscular quarters and thighs—short, flat, firm legs, and good round feet: he should walk freely and well; step sharp and high in the trot, and canter safely and freely; if, in addition to these qualifications, he is quiet and does not shy or stumble, he is invaluable. A great many are bred in Wales, but by far the best come from Norfolk, Lincolnshire, and the North, where much more attention is paid to breeding them, and more care is taken of them than in Wales, where they run wild on the hills till they are three or four years old, when they are sent over into England in droves to be sold at the different fairs and markets.

The faults to be avoided in purchasing a cob are upright shoulders, want of courage, and want of action. Particular attention must be paid to the shoulders—that they are well formed and oblique, many horses of this class having low, upright shoulders, which renders them valueless as riding cobs, and useful only for harness purposes—nothing being so uncomfortable and looking so ugly as riding on the top of the shoulders instead of well behind them, which must necessarily be the case with straight, low shoulders. In fact, the value of a cob depends almost entirely on his shoulders and action; for, whereas in the one case he would be only worth £30, in the other he might be worth £120, or even more. Some very fast-trotting cobs are

bred in Wales, but they are mostly deficient in style and quality, though they can go a great pace. As a rule, Welsh horses are much better than they appear to be: they are hardy, useful, and strong, and will stand a great amount of work; and, in addition, can generally be bought at a price suitable for those who want a useful animal at a moderate price in preference to a showy and expensive one.

The next variety we will notice is the pony; and there are various sorts, or rather kinds, named after the counties and localities in which they are bred—as the Welsh, the Scotch, the Exmoor, New Forest, Shetland, &c. They are all rough, strong, and hardy animals, varying in height from 12 hands to 14 hands, doing a great amount of hard work at a small expense for keep, &c. Though for the most part well-bred, they are generally deficient about their shoulders, which are low and upright, like those of most ponies. They are of no value for general riding purposes, except to carry children, and are principally used to go in light harness, in which they will do an amount of work almost incredible if properly cared for. They are sure-footed and fast, if not over-weighted, and some make first-rate shooting ponies; but they rarely grow to much value. The Welsh ponies grow to a larger size than the other sorts I have mentioned, and in all there is a marked improvement of late years, owing to small thorough-bred stallions having been sent into the different districts for the purpose of improving the breeds. The prices would vary from £15 to £30, according to circumstances, age, action, &c.

The Shetland pony is the smallest of his class, seldom exceeding 10½ hands high, some never growing above 9 hands high. They are like dray horses in miniature—are very strong, active, and hardy; have small heads, good shoulders, capital backs and quarters, and from their great beauty, combined with general good temper and docility, are well calculated for the use of children. They are too small for any other purpose, except for drawing a small chaise. Some are very fast and enduring. I once knew one only 10 hands high, that had trotted ten miles within the hour in harness.

Defects, Diseases, and Faults to be avoided in all Horses.

A loose, weak neck.—Horses so formed are extremely unpleasant to ride; they get their heads up, cannot see where they are going, and it is impossible to feel their mouths.

Twisted fore-legs.—Horses with this defect, when put to work, hit the inside of the fetlock joint, and very often under the knee as well. Both are highly dangerous, as the parts soon become swelled and sore from repeated blows, rendering the horse liable to fall.

Capped hocks are very unsightly, but seldom cause lameness.

Diseased eyes, from any cause, are sure to terminate in blindness.

Stringhalt.—Catching up one or both the hind legs. When considerable, it renders the horse very unpleasant either to ride or drive.

All bony enlargements of the joints—viz., spavin, ringbone, sidebones, &c., as causing lameness, very difficult and doubtful of cure.

Laminitis, or inflammation of the laminæ, generally resulting in pumiced or convex soles of the feet.

Corns, unless small, as, if not properly treated, they are very troublesome, often causing temporary lameness, and rendering the horse cramped in his action, and liable to fall.

Chronic cough.—Frequently terminates in broken wind.

Megrims.—An attack of giddiness, more or less violent, that frequently attacks some horses, rendering them for the time highly dangerous. Since condition has been better understood, and horses are fed more on manger food and do not have so much hay, megrims are not so common as formerly. Fast free horses are more liable to it than others. The cause is supposed to be determination of blood to the head.

Navicular disease.—Lameness in the navicular joint, and incurable.

An unnerved horse, as showing the horse's feet are dis-

eased. Many unnerved horses will with care do a great deal of work either on the road or in the field. It is a merciful operation by which many horses can work and move about with ease and comfort, that must otherwise have been destroyed, or lived in pain and misery to the end of their days.

Roaring.—A disease of the respiratory organs, causing the horse to make a noise when put to any exertion.

All enlargements of sinews and tendons, arising from breaking down or violent strains, unless the horse has been properly fired for them, and is intended only for light, easy work, when he may stand.

All horses that show any sort of vice, as rearing, kicking, running away, being restive, and shy badly, or are vicious in the stable. Such animals are highly dangerous to all, but particularly so to the inexperienced.

CHAPTER V.

STABLE SERVANTS AND STABLE MANAGEMENT.

Stable servants—Groom—Stable management of the Horse—Feeding in the stable and out—Water—Summering the hunter—Exercise and work—Clipping and singeing—Degree of warmth required for stabled Horse—Management of the feet—Stable vices—Tricks and vices out of the stable—Harness for Saddle Horses—Harnessing and putting-to—Cleaning Harness.

THE coachman must be a steady, sober, good-tempered, and respectable man, his office being in most cases a very responsible one; many masters, either from want of energy or through ignorance, leaving so much to his management. He not only has the entire control of the carriage and horses, buying the oats, hay, straw, &c., but very frequently selects and purchases the horses, so that, unless a conscientious man, he has it in his power to subject his master to serious loss and inconvenience. He must have had considerable experience in driving, to drive quietly and steadily

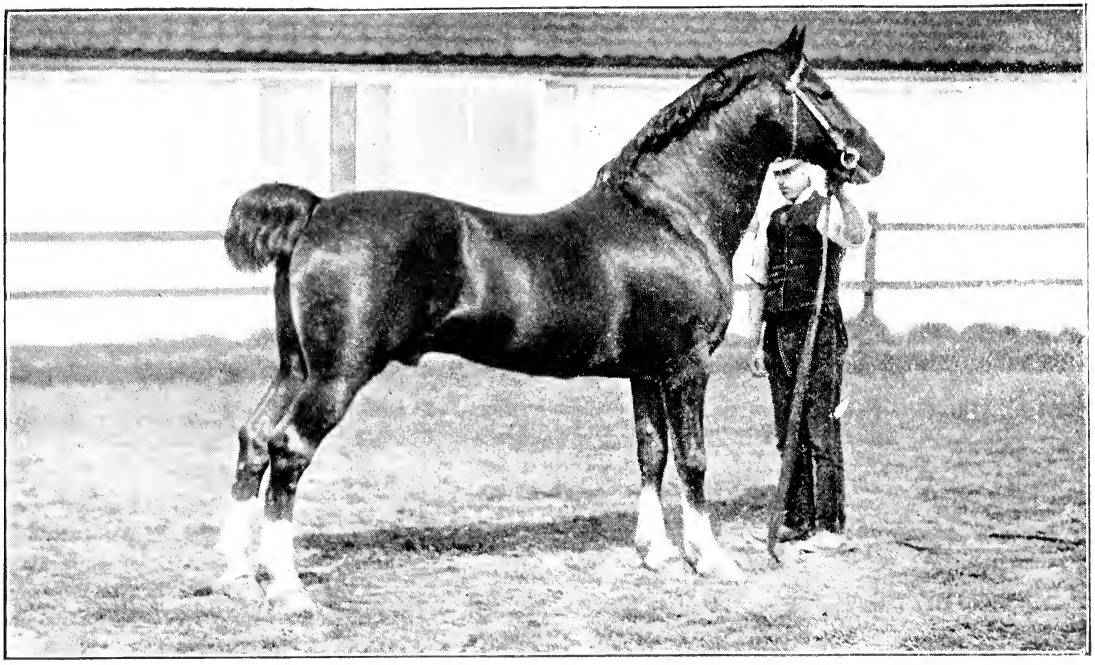
without allowing the horses to jerk or snatch, which is most disagreeable and uncomfortable to those in the carriage, and thoroughly understand their management in the stable. No man, however willing, can attend properly to more than two horses and the carriage, and if the carriage be out on an average three hours a day, he will find he has but little time to spare if properly turned out. The great inconvenience of having only one servant is, that, on the carriage coming in wet and dirty, if it be not at once washed before the mud dries on, it will not only take much longer to clean, but the paint and varnish suffer by the mud being allowed to dry on; while if this be done at once, the horses are standing quite unattended to, at the risk of taking cold, getting cracked heels, &c.

In case of accident or illness, however, disabling one horse, three or more are generally kept, in which case a helper is indispensable, and the wet carriage and horses can then receive proper and immediate attention.

The coachman generally has rooms over the stable to protect the property, and to be on the spot in case of accident or illness to the horses, so that he lives rent free; in addition to which his average wages will be £2 per week, including his livery, stable dress, coals, candles, &c.; those of a helper will vary from 15*s.* to £1, according to his age, and the locality. Where a coachman has but one horse and carriage to drive and attend to, a younger and less experienced man will answer the purpose, particularly in the country. In this case, as his time will not be fully occupied in the stable, he may be expected and required to make himself useful about the house, &c. His wages, too, will average 10*s.* or 12*s.* a week less than those of a superior coachman.

The Groom.

There are several descriptions and classes of grooms employed in private stables. With the stud groom, for the breaking and training of thorough-bred horses, we have here nothing to do. The most important is the groom for the training and management of hunters. For this purpose he must be steady, respectable, and intelligent, and



HACKNEY STALLION, "DANEGELT." BOURDAS'S (No. 174). Winner of Three First and many other Prizes, 1883-6.
The Property of SIR WALTER GILBEY, BART.

have had considerable experience; for, as the hunter, to carry a man well and safely to hounds, must be very fit, it follows that the groom must understand not only how to prepare him, but when he is fit.

The preparation required for a hunter is such as to enable him to carry a certain weight through deep ground for some hours, often at a great pace; hence his wind must be clear, his flesh hard and firm, he must be full of power and muscle to perform the severe and long-continued exertion so often required of him.

No groom can, without considerable experience, do this, as he must understand how to feed and treat the various habits and constitutions of the different horses that come under his charge, the quantity of corn, &c., and the amount of work best suited for each horse, and how to treat the various accidents, blows, strains, thorns, cuts, &c., to which all hunters are liable.

A hunting groom cannot properly attend to more than three hunters without help. In studs of five or six he should have two helpers under him, and in large studs one man to every three hunters; his own time will be fully taken up in a general superintendence of the helpers, attending to the horses that are ill or have met with accidents, &c., and perhaps riding second horses for his master when hunting.

A good hunting groom is a very valuable servant, so much depending upon him as to the safety, comfort, and style in which a man is carried to hounds. He cannot, of course, make a good or fast horse out of a bad or slow one, but by proper care, attention, and exercise he can very much improve him, and a fair moderate horse fit to go will generally beat a really good one only half prepared.

His average wages, including extras, will amount to from 30*s.* to 35*s.* per week; but in his case, as in that of any first-rate trustworthy servant, a few additional pounds a year is money very well and economically laid out.

Another class of groom is one that is rarely expected either to ride or drive. His duties are to feed, dress, and attend to the horses generally, and clean a chaise and harness, &c. He should be active, respectful, and obliging;

two horses with a chaise and harness will be as much as he can properly attend to; and should he be expected occasionally to drive or ride, he will need a helper: nothing tends so much to spoil a servant and make him idle and careless in his work as giving him more than he can fairly and properly do. When a groom is required to help in the stable, and ride behind his master and family, I know of no one so useful and fitted for the purpose as a good steady lad out of a racing stable, and who has grown too heavy for that work, as he is sure to be a good stableman, and to ride well and smartly.

After these come the nondescript class, part groom, part cowman and gardener, who are more useful than smart or ornamental. They cannot be called grooms; they simply just feed and "look after" the horse, or pony and carriage, and are for the most part young fellows who are either too lazy or too loutish to try to improve or take any pride or interest in their work.

Stable Management of the Horse.

In the morning the first thing the groom does on entering the stable, which must not be later than six o'clock, if the weather be warm and fine, will be to open the door and admit some fresh air; he will then give each horse a little water and a piece of hay; having eaten which, he will put on the hood and the watering-bridle, and take him out for exercise. While out, the helpers will separate the dry clean straw from the damp and soiled, removing the latter to the manure-heap. Thoroughly sweep and cleanse the floor of each stall and box, allowing the straw to remain turned up until the return of the horses, when it may be partly littered down again. Each horse will then have a feed of corn, and having eaten it, be well dressed and his stall or box set fair. When one groom only is kept, or where the horses do a fair amount of work during the day, early exercise is impossible and unnecessary.

In dressing the horse the first thing the groom does is to turn him round in his stall, fold the rug back from his neck and shoulders, then well and carefully brush his head, neck, and shoulders with the body-brush, cleaning it with

the currycomb as often as required. He is then turned back in the stall, the clothing removed, and his body, hind-quarters, and legs undergo the same careful and thorough brushing, care being taken to keep the brush clean with frequent use of the currycomb. He is next wiped all over with a damp wisp made of hay-bands, which entirely removes any remaining dust, and after being well wiped over with a linen rubber or wash-leather, his clothes are put on and secured by the roller. His eyes, nose, and *anus* are next sponged clean, his mane and tail carefully combed or brushed, first with a dry and then with a damp brush; the feet are carefully picked out and washed, the legs well brushed, and if dirty or stained, well washed, and either rubbed dry or dried in flannel bandages. The stall is then set fair, and the horse ready for use.

With grey or light-coloured horses, or that have white legs, the better plan will be to wash all stains off the quarters, &c., and to wash the legs with warm water and soap, rubbing the first dry and well bandaging the latter before proceeding to dress the horse, as by the time that operation is over the legs will be dry and the horse warm and comfortable.

In the spring and autumn, when the horse is shedding his coat and the hair is broken and thin, the body-brush must be laid aside, the wisp and rubber being then quite sufficient for the necessary dressing.

Before having the harness put on to go out, the horse must again be wiped over, his mane and tail brushed, and his hoofs rubbed round with the oil-brush. Some people object to the use of the oil-brush to the feet, and only have them done round with a wet brush.

On returning to the stable after work, if he be clean and dry, his feet should be well picked out and washed, and he should again be well dressed and set fair. But if he returns hot and tired and wet and dirty, the best and quickest plan is to wash him all over with tepid water, scraping him immediately as dry as possible, clothing him up, and bandaging his legs above his knees and hocks with flannel bandages. If the weather be warm, he may be washed in the open air, and a light suit of clothes put on, to be re-

placed by fresh as soon as he is dry; but in winter, and if it be cold, he must be washed in the stable, and a suit of warm clothing put on until he is dry, when it must be changed. By this means the horse will be got fresh and comfortable in a much shorter time and with less fatigue to himself than if the dirt and sweat were removed in any other way and he was rubbed dry.

At seven o'clock, the horses that have not been out or done but little work may again have their clothing removed and be wiped over, which must not be done when the horse is tired with work and has been once made fresh. They may then be fed, their heads let down, and the stable closed for the night.

Feeding in the Stable and out.—The food upon which the horse is fed in Great Britain, in almost all cases, consists of hay or green meat as the staple, together with the addition of one or more of the following articles—namely, oats, bran, beans, carrots, turnips, or potatoes. Barley is only given to farming horses in this country, though abroad it is very commonly substituted for oats; as green food, common grass, vetches, Lucerne, and rye (common or Italian) are generally given. When green food is used in the stable it is called soiling the horse, and when given in the fields, turning him out to grass.

The *hay* given to horses at fast work, whether on the road or for hunting, should be in all cases of upland quality. Meadow or clover-hay is only fit for cart horses, which require a considerable quantity of fatty matter, and do not sweat to any great extent, nor is their wind tried as in fast work. Green hay is not good, there being less nourishment in it than in properly fermented, and therefore brown, hay; and though it does not prove that the hay is new, as is very commonly supposed, yet it is not nearly so wholesome as the brown variety, provided it is not mouldy or burnt from over-heating. Hay should be cut from the inside of a large rick, at least one year old, and should be very sweet and fragrant: it is better tied together in trusses, which are in most counties 56 lb. each, so that the weight of a load is easily estimated by counting them. Not more than two or three months' consumption should

be stowed away at one time, as it is liable to become mouldy and musty, and it will then be refused by horses, or, if taken, it will disagree with their stomachs. The quantity which a full-sized horse at strong but moderately slow work will consume, is about 84 lb. per week, or from that to 98 lb., which latter quantity some washy large horses absolutely require to keep them in health. There is a vast difference in horses in respect of the weight of hay necessary for their full condition ; some will eat nearly twice as much as others, and yet not be half so strong, or look nearly so fleshy and full of health. I have often had two medium-sized horses in my stable which together lived upon as little as another larger horse in similar condition consumed to his own share. Nevertheless, 12 lb. may be considered the average for full-sized horses ; but no master should make up his mind that his one horse is sufficiently fed if he has that quantity, for it may very probably happen that he is one of those hungry ones which will require at least 1 cwt. per week, especially if the rack is a high one, and the groom is not very careful to replace the wasted hay. In all racks the hay should be lightly put in, and not pressed down, for if it is, the horse will be sure to pull out more than one mouthful at a time, and if his attention is called to the foot of the stall, he will turn his head round and bring a quantity of loose hay with it, even if the rack is as low as it should be.

Chaff is hay cut up with straw in a chaff machine, which may be the old box-and-knife used with the hand, or it may consist of any of the various chaff engines which are now sold by the machine-makers, and worked either by the hand or by horse or steam power. The hay used is in most stables the coarse parts of the usual quality employed, which would otherwise be rejected, and sometimes even the hay-bands are cut up in this way. It is arranged in the trough of the machine with alternate layers of straw, so that the chaff when cut consists of portions of hay and oat straw about half an inch long, and mixed in equal quantities. Care should be exercised that both are sound and sweet, as inferior food is the reverse of economy as well as subversive of good health. Chaff is now the substitute for hay

in many establishments, experience having shown that by it all horses masticate their corn more perfectly, are at liberty to rest sooner, and cost less per head for keep. Many of the better breeds might be more advantageously fed on this system, not only ensuring economy, but avoiding waste in the usual allowance of hay, and suffering less from the diseases to which idle or lightly-worked horses are subject. This is at least our experience, not only in our own stables, but in others where the plan has been carefully carried out in all its details.

Oats and *beans*, together or separately, come under the general name of horse-corn; and most horses at hard work in the winter require both, especially if they are not very young. Oats are always given to horses in private stables, and they form the best general addition to the hay; but sometimes, soon after the horse has changed his coat, he becomes very flagging and unable to bear his ordinary work, especially if he has been much exposed to wet or cold; in this case, the addition to his oats of from half a quartern to a quartern of beans during the day will often renovate his spirits and strength, when he rapidly gains flesh. In young horses this addition may be discontinued after January, but in old ones it should be kept up till the following May, after which month few horses are the better for the extra stimulus afforded by beans. They should always be split, and oats are generally the better for being bruised, or "kibbelled," as it is generally called; and for both these purposes a mill is constructed and sold, which, by the alteration of a screw, will adapt itself to either operation. Both oats and beans should be one year old, or at least six months; at which age, if the harvest was a dry one, both oats and beans will often be dry enough.

It is consistent with sound practice, especially when economy is to be considered, that corn should be of the best quality. Why some adhere to the belief that inferior kinds will do for lightly-worked horses, it is not possible to say. It should be evident that the heaviest grain, or pulse, when sound and clean, should also contain the greatest amount of nutritious matter. Yet some aver that the husk is as essential as the corn. The

advantages are eminently ours, seeing that we can supply all that the husk contains in the form of chaff at a much lower cost. If select condition is required conjointly with power and endurance, the best of all kinds of food is practically the cheapest.

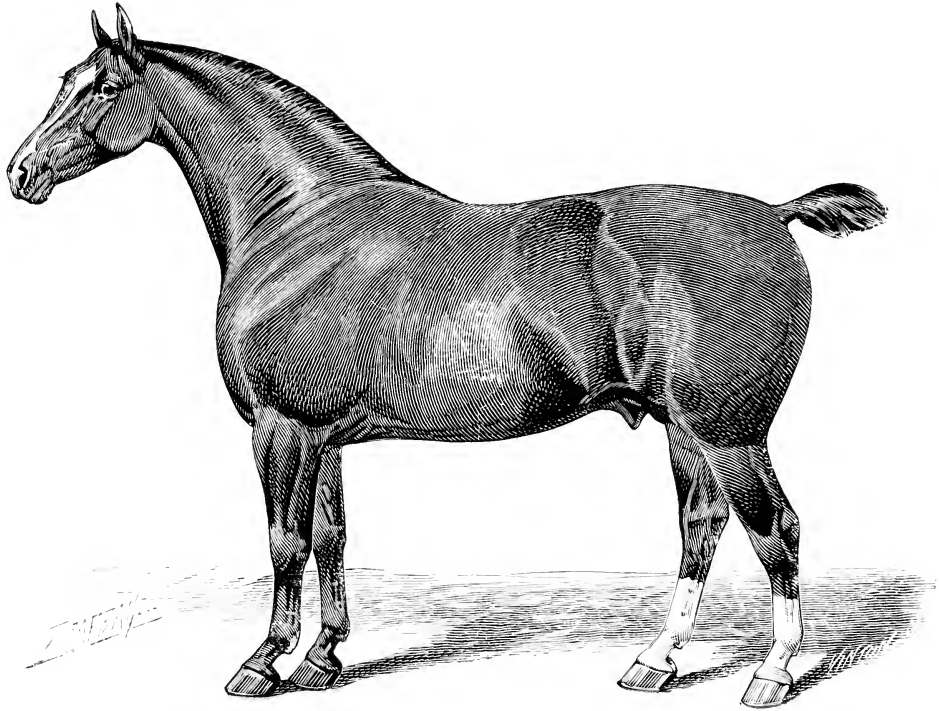
Great stress is laid upon the necessity for the best food, cost what it may, for the feeding of race-horses and hunters, whose appetite is said to be "the measure of their corn." With them it is "the pace that kills," and happily they are allowed long intervals for recuperation of the vital powers, or food ceases to be the source of strength. Hacks and carriage horses, however, seldom are allowed more than three or four quarterns a day of English oats; and if they have, instead of these heavy oats, one quartern more of Irish or Welsh, they will do much better. The difference is still greater if it is between half a peck of English and three quarterns of Irish, because most horses like to have their stomachs tolerably filled with their corn, which half a quartern at a feed scarcely will do. Now, when English oats are at 3*s.* 6*d.* per bushel, Irish oats are generally about 2*s.*; and consequently, three quarterns of the Irish may be given for the same price as two of the English, which exactly accords with the calculation I have made above. In purchasing Irish oats, care should be taken that they are free from stones, or, if they are mixed with them, they should be removed before being given, by examining the sieve containing them. This is the worst feature in this kind of corn, and sometimes exists to a great extent. Beans are of all qualities, from the best English to the Egyptian; but as a general rule, for private stables I fancy the English answer the best. They are used more as a stomachic than as regular food, and for that purpose quality is of more importance than quantity. In cart stables, or for coaching or fly-work, foreign beans may be used, but I have never myself found them answer my purpose well. By purchasing Irish oats of the importers at Liverpool, London, or Gloucester, an immense reduction in price is effected; and they may readily be conveyed by rail to most parts of England at one penny to twopence per bushel extra.

Gruel is made by mixing oatmeal in cold water; and about a pint of meal will make four quarts of gruel. This is enough for ordinary occasions, but for a very exhausted horse, two pints should be mixed with about the same quantity of water, and boiled for ten minutes, carefully stirring it the while. It should be given with the chill just taken off.

Bran is the outside coat of wheat, removed in the dressing after grinding. It is only used in private stables for mashes and poultices, though sometimes it is given with beans as a regular article of food, just as is the case in cart stables. With their addition it answers pretty well in slow work, but not nearly so well as oats, and its price alone is a temptation to its use.

The *bran mash* is one of the most valuable kinds of food for sick horses, or for preparing horses in pretty good health for physic, or for cooling down those which are to be turned out to grass. It is made either as a *cold mash* or as a *hot mash*—the former being merely bran, with the addition of as much cold water as it will absorb. The *hot bran mash* is made by pouring enough boiling water to saturate it, and then covering it up till sufficiently cool to give the horse. As the bran swells considerably, one-third of a bucket of bran is enough to make half-a-bucket of mash, which is the usual quantity given. Most horses on hard and dry food are the better for this once a week; and it should be given on the night before their rest day, which all horses ought to have; and when so used, it may be allowed to supersede the use of their evening feed of corn; but if it is given more frequently to a costive horse, it must be in addition.

Carrots, *turnips*, and *potatoes* are useful to horses doing slow work, and bare of flesh; but they do not answer for fast work, nor for horses which are apt to scour. Of the three, the first is the most suitable to horses; and when they are to be made up for sale, and got very "fresh," as the dealers call it, a few carrots boiled with linseed will effect the object much quicker than any other kind of food, especially in the early spring, when vetches are not to be had. This food is also useful in chronic cough, and will



HACKNEY STALLION, "LEIGHTON EAST RIDING" (1476). H.S.B. Champion, Five First and Thirty-seven other Prizes. The Property of T. F. KYNNERSLEY, ESQ.

sometimes effect a cure; but it must not be given while the horse is at work, as he is very much inclined to sweat while eating it, and will then lose as much as he gains. Swedish turnips, or potatoes, are substitutes for carrots, but they do not answer the purpose nearly so well. Both of them should be steamed, not simply boiled; or if the latter process is adopted, the water should be thrown away, as it is not wholesome for the horse.

Barley forms a valuable ingredient of food mixtures. It is a gross mistake to charge this grain as being hurtful. When used under common-sense rules it is safe and profitable. We have kept hard-working horses in splendid health and condition, when the food is mainly composed of barley.

Of *Maize*, or *Indian Corn*, we cannot speak so confidently. In small quantities it may serve to cheapen the whole mixture, but as a nutritive article it is far behind even common oats, and creates the tendency to a "washy" state of the system.

Linseed is a valuable adjunct to horse feed, but it should be used with care, as large quantities are apt to produce a lax state of the bowels. The simplest form is that of "tea," or "mucilage," made by mixing one pound of the seeds with one gallon of cold water in a covered and glazed earthen vessel. During twelve hours the mixture should be stirred a few times, after which half a pint may be mixed with the manger food every other evening. The results are seen in the "kind," soft state of the skin and shiny hair. Chronic cough is often greatly benefited by its use.

Feeding.

Horses should have the corn four times a day—at about seven, eleven, three, and seven; and the hay twice—at night and in the morning. These times may be slightly varied to suit the convenience. The quantity of each must depend, as we have said, upon the size and description of the horse, and the amount of work required of him. A full-sized carriage horse will require at least five quarterns of corn, and about twelve or fourteen pounds of hay, daily. These horses being kept for show and style rather than for

work, are required to be full of flesh to give them a grander and more imposing appearance.

The hunter having hard, fast, and long-continuous work to perform, greater care is required in feeding him. Some hunters are delicate feeders, and cannot under any circumstances be induced to eat more than three quarterns of corn and beans in the twenty-four hours; consequently they never look well, are never quite fit, and cannot come again more than once in ten days or a fortnight. Such horses must be got fit as best they may by changing the diet as often as possible, and by giving only a little at a time, but frequently. By changing the diet I mean, by sometimes giving old beans with the corn, at other times old white peas, and adding at one time good hay chaff, at another clover chaff, and occasionally a few pieces of chopped carrot mixed with the corn—in fact, trying almost everything that will tempt a delicate horse to feed.

From five to six quarterns of corn, with a few good old beans or white peas, and ten or twelve pounds of good old meadow hay, is the average daily food of a hunter going three days a fortnight. It is a great mistake to get a hunter too fine, as, the work being hard and long-continued, he must be full of muscle and strong, but at the same time in good wind. It is difficult to lay down any definite rules for feeding hunters, as some require much more food than others to keep them in the same condition. As soon as convenient after a day's hunting the horse should have some gruel—it is better than corn, as being easy of digestion and more invigorating for a tired horse. A hack will require from three to four quarterns of corn a day, and about the same quantity of hay as the hunter. His work is much lighter and he requires a more round and fleshy appearance. Beans are only occasionally necessary for hacks, and then only when much exposed to bad and wet weather. Harness horses must be fed in much the same way as hacks, but much depends upon their size and the work they are required to perform. Ponies require about two quarterns of corn daily, and seven or eight pounds of hay, some even less than that, as they are invariably hardy, and unless hard worked will keep fat on very little. Horses

of all sizes and all descriptions should have chaff mixed with every feed of corn, as it enables them to masticate the oats more thoroughly, and so far assists digestion.

Soiling is a term used for the feeding of horses on green food indoors.

Turning to grass is practised when the health is injured by long-continued hard work and dry food, or when the legs are sore, or the feet inflamed. For the former state a summer's run is the best remedy, because at that time the grasses are the most sweet and nutritious, and the constitution is not tried by exposure to the cold and wet. A meadow should be chosen where there is plenty of good and sweet grass, and the horse should be gradually prepared for the change, except in the height of summer, by taking off his clothing while in the stable, allowing the dirt to accumulate in his skin, and also reducing the temperature of his box. In the summer, tips to his fore-feet will generally be prudent; but in winter, when the ground is always soft, they are seldom necessary. If the legs or feet are "stale," a winter's run will do far more than the same time occupied in the summer's run, because the object is not only to avoid fresh battering of them on hard ground, but also to lower the whole system by a poor and reducing diet. Winter grass, therefore, will effect the object very differently from the fattening feed which is met with on the meadows during summer and autumn; and by turning the lame horse out in December, great good *to his legs* may be expected when taken up in the following May, before which time it is not to be expected that he will be sufficiently in flesh and his coat smooth enough for any work. Whether in summer or winter, every horse accustomed to a stable ought to have a hovel to run into, which protects him from flies in the hot days of summer, and from the wind and snow in the cold nights of winter.

While giving the foregoing popular advice, we desire to state that for the restoration of jaded legs and shattered constitutions, there is nothing like absolute rest in a cool box, having a small, dry paddock or yard attached. We thus avoid damage to the feet and legs, as well as the pasture.

Summering the Hunter.

There still exists much difference of opinion on this point; but when we consider that the great object to be attained is rest, it must be evident to all who have seen horses at grass in the summer, that the old plan of turning the hunter to grass is about the very least likely way to obtain it. The ground is then very hard, the sun hot and oppressive, and even in the shade under the trees, the horse is constantly tormented by flies. He is never still, walking backwards and forwards, kicking and stamping to knock them off, till, unable any longer to bear them, he takes a mad gallop round the field. This state of things cannot be rest, but more destructive to the legs and feet than any ordinary amount of work. In addition to which, the horse gets big and lusty on soft green food, all of which has to be taken off at the expense of his legs and feet, before he is fit to go, and is another very unsuitable preparation for the work required of him in the winter. The modern plan, the advantages of which are every year becoming more and more apparent, is, at the end of the hunting season to cool the hunter, by giving him a dose of physic and then gradually taking off his clothing. At the end of a month he may be turned into a large cool box or shed, have from two to three quarterns of corn a day, according to his constitution, with green meat in sufficient quantities to act as a natural alterative and tonic to his system, and get him fresh, but not fat and out of shape, as is too often the case. His hind shoes may be taken off, and light shoes or tips put on the fore-feet, and removed about once a month. These will prevent his feet getting broken away and preserve them in shape. If he require blistering, or has any lumps or bumps on his legs, from blows or thorns, to be sweated down, it should at once be done. For this the biniodide of mercury will be found the best. At the beginning of August, at the latest, the hunter may be taken up; his legs and feet will be found to be clean and cool; he should have a dose of physic, and begin steady exercise; after which, if the groom do his duty, he will be free

from the different complaints that usually attack a horse summered in the field, and when the hunting season arrives he will carry his master safely and pleasantly through runs that will soon stop the other for want of real condition.

The *straw-yard* is a popular method of improving the legs of the over-worked horse, and in it he is turned during the winter, with a shed to run into, and the soft manure or litter in the yard to run upon. Hay is given, but seldom more than enough to keep the stomach in order, and barley straw affords the chief sustenance in most cases; sometimes a little hay is given cut as chaff with straw, and in some cases also mixed with a feed or two of corn per day. When a suitable winter pasture cannot be obtained, the straw-yard is very efficacious for inflamed legs and feet; and, as its small extent precludes all galloping about, it is even more suitable than an open pasture.

Notwithstanding these supposed advantages, there are serious objections to the plan. Horses are often injured by horned animals, or otherwise chased and irritated, that rest is impossible. In our experience the wet and manure of straw-yards are certain destruction to the feet. Thrush and canker are the common results.

Straw.—For the bedding of horses wheat straw is generally used. The greater part of wheat is now threshed out by machine, and but little by hand, consequently the straw is not so good, and does not last so long as formerly, the machine breaking and bruising the straw so much more than the flail.

A careless groom will use at least one truss of straw per week more to each horse than a good careful one will use. The latter will be careful in the morning on turning up the bed to separate the soiled dirty straw from that which may be used again, removing the former from the stable behind; then, after thoroughly sweeping out the stall or box, put what may be a little damaged at the bottom, and the clean at the top. Such a groom will use about two trusses to two and a half per week, while another would use at least one truss a week more.

The best way to economize litter is to sweep the stall or box out as dry and as clean as possible in the morning,

and take up the droppings regularly at once, before they are trodden into the straw.

Straw when good is bright and clean-looking. The price will vary from 30*s.* to 45*s.* per load, according to the season. In wet seasons it is difficult to get good straw, as it is generally then dark and mildewed-looking from the rain. At any time, good oat or barley straw is better for cutting into chaff than wheat straw, but it is not easy to obtain; most farmers keeping it for fodder for home use.

Economy in the stable depends entirely upon the groom. If he does his duty well and conscientiously, he will keep down the expenses as far as is practicable with justice to the horse. Nothing whatever is gained by buying cheap or inferior fodder; on the contrary, the horse suffers in every way—in condition, appearance, and value.

Water.—Soft water is in all cases better for horses than hard, hence they are often watered in a brook or pond in preference to the bucket, which is generally replenished from the well. If, therefore, soft water can be easily procured, it should in all cases be given, but I do not think that with our present warm stables it answers well to allow the horse to slake his thirst at the pond or brook at all seasons; cart horses may do so with impunity, because they are seldom heated with their work, and their stables are comparatively cool. Boiling gets rid of a great proportion of the lime, and where it exists in large quantities it is advisable to give all boiled water. The *temperature* of the water given should in all cases be that of the stable, or very little below it; and so in the warm one the water must be raised to at least 70 degrees of Fahrenheit, by mixing a little hot water with the cold, or by leaving the bucket full of water constantly in the stable, and only using it when it has acquired the temperature of the stable. If cold water is given to a horse used to it chilled, and to warm stables, it sets the coat the wrong way directly, and often produces colic, or shivering, followed by rheumatism; and this is especially likely when he has undergone any violent exertion, *and is becoming cool from it.* It does not do nearly the harm while the horse is reeking with heat and perspiration that it does when given to the tired horse

just cooling down from his exertions. If, however, chilled water is generally given, it should be rigidly adhered to when the horse is travelling, for an animal used to it is far more likely to be injured by cold water given when in a sweat than the one which habitually swallows it at a low temperature with his ordinary food.

The *quantity of water* proper for the horse varies very much, depending upon his tendency to purge, upon the amount of sweat which he loses in his work, and upon the nature of his work. About from one-and-a-half to two ordinary buckets per day is the average for private stables, depending upon the size of the horse and the severity of his work; and if water is allowed to stand constantly in the stall, few healthy horses will drink more than two buckets per day. About half-a-bucket is generally given in the morning, another half in the afternoon, and the remainder the last thing at night. More than a couple of quarts should never be given on the road, even on the hottest day; but this quantity may be repeated every five or six miles with advantage if the weather is very sultry, with or without a little oatmeal. It is seldom advisable to give the full quantity of water immediately before or after the feed of oats, but rather to let the horse drink about two quarts, and half an hour after his feed to let him have the remainder. But if the oats are not given for half an hour, the water will not hurt if all is given at once. Many people prefer a constant supply by means of a water-manger kept full.

Where practicable it will be better for the horse to have water constantly by him in a small tank for the purpose, that he may drink when he feels disposed; when such is the case, he drinks less than when it is offered to him at stated times.

In stables unfitted with tanks the water must be taken to the horse not less than four times a day, and he then may be allowed to take as much as he pleases in moderation.

Dirty pond-water should always be strictly avoided, as it is often a source of filth and putridity, and likely to cause disease. Hard pump-water is often injurious at first till

they become used to it, but that is at all times preferable to stale stagnant rain-water. Hard water will to some extent produce indigestion, and consequently a rough staring coat.

Care must be taken to water the horse some little time before starting him on a journey, and also, on his return, that he is not allowed to drink too much at first; and if the horse be heated and the water cold, it should be just chilled before allowing him to drink, or injury may follow.

Exercise and Work.

Unless the weather is wet and bad, every horse, whether in a stall or box, is better for going out every day.

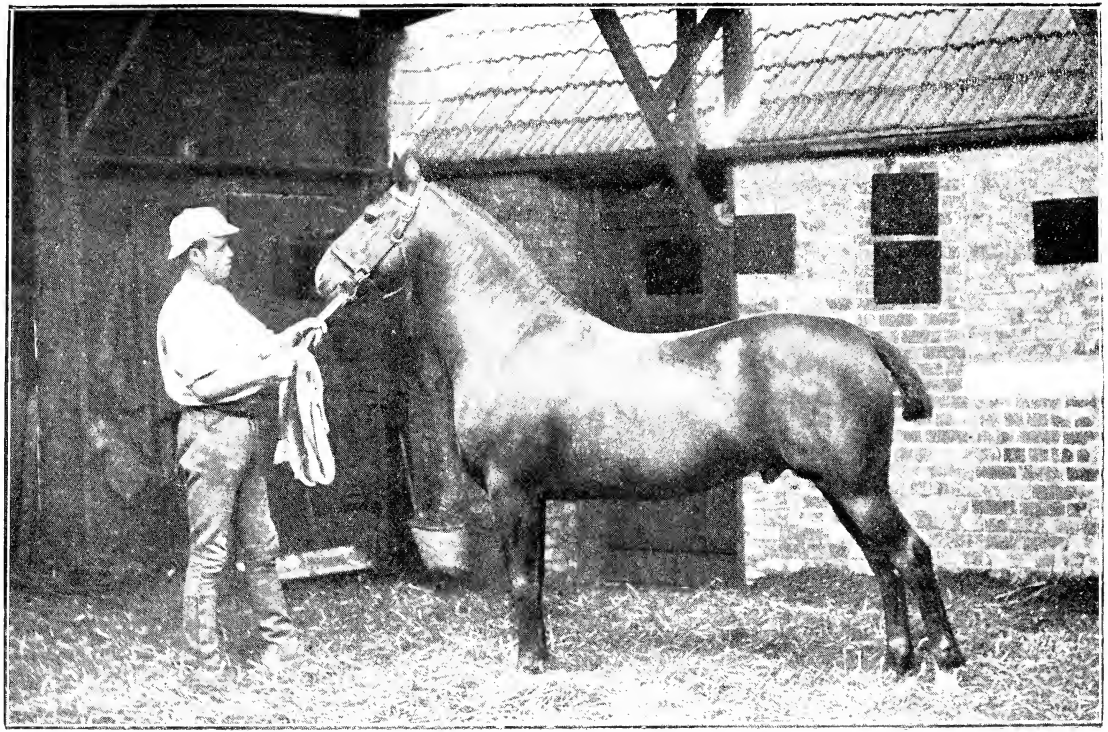
The work of a carriage horse does not on an average exceed seven or eight miles. They are very often out for three or four hours in the day, but by far the greater part of the time they are standing about, while the occupants of the carriage are either shopping or making calls, &c. From their size and weight they are generally unfit for long journeys and hard work.

The work of a hunter is to carry a man to hounds, and in order to render him fit to do so safely and well, he will require a great deal of exercise.

Before the commencement of the hunting season he will require three hours' steady walking and trotting exercise, with occasional sweats and strong gallops; but afterwards, supposing he is ridden to hounds three days a fortnight, he will require but little fast exercise—from two to three hours' a day good steady walking will keep most horses quite fit.

To go with stag hounds, a horse must be drawn rather finer than for fox hounds, his work being faster, but not so long continued. The meet is later; the deer is uncarted, and the run begins at once, seldom lasting more than from an hour and a half to two hours.

With fox hounds, on the contrary, the meet is earlier, and a fox is often not found till after a long draw. The run, from various causes—checks, bad scent, &c.—is very seldom very fast or so long as with stag hounds, conse-



Bay Stallion Cob, "Robin Hood," 1138, H.S.B., (14 hands). Winner of many Honours. The Property of the Compton Stud Company.

quently the work of the horse is not so severe and distressing.

On leaving hounds, the hunter should have some gruel and a handful of hay at the first convenient place; he may then, if not fatigued, be ridden home at the rate of six or seven miles an hour. On reaching the stable he will be washed and scraped as dry as possible, a complete suit of clothing put on, his legs bandaged with flannel bandages, some chilled water and moist food given him, and left till dry. He must then be wiped over, dry clothing put on, his legs well hand-rubbed, dry bandages put on, again fed and watered, and set fair for the night.

The fair average day's work for a hack or harness horse is nine or ten miles, in which case exercise is quite unnecessary. More harm and injury are done to horses by the grooms when at exercise than in any other way; and unless the man can be fully depended upon, the less they are exercised the better. Where the horse is only occasionally worked, exercise is of course absolutely necessary, not only to preserve him in health, but to keep him steady and from getting above himself.

Clipping or Singeing

Is one of the greatest improvements ever introduced into stable management. It is a blessing not only to the horse, but to every one who uses and attends to him. A horse clipped or singed will not only do double the amount of work on the same amount of food that a horse with his natural winter coat will do, but in the one case he will be fresh, cheerful, and full of vigour, while in the other he will be dull, out of condition, and seldom or never dry and clean. I have seen horses (hunters particularly) that no care or food could get into condition till clipped or singed, immediately change for the better, and get big in their work.

The best time to clip or singe a horse must depend principally upon the state of his coat. Some shed their coat so much earlier than others, while in some horses it is much thicker and coarser. About the end of September

is the best time for singeing, and three weeks or a month later for clipping.

Clipping requires much practice and very neatly doing to look well; it is far more difficult than singeing, and consequently is not so frequently used. The effect of both is the same—to shorten the long rough winter coat to the length of the short summer one, thereby preventing that extreme sweating which is always consequent on a long winter coat. It is performed with scissors and a comb. The former are generally curved, and of various sizes, to suit the different parts of the body of the horse for which they are used.

Singeing is performed with a gas-flame, or a lamp burning naphtha or some spirit of the same description, and which is passed lightly over the whole body till the hair is reduced to the required length. It may be commenced as soon as the winter coat is partly grown, and must be repeated about every ten days or a fortnight till the coat is set and done growing, by which means the coat will not only be kept short, but the hair will better retain the natural colour. After Christmas, about once in three weeks will generally be found sufficient to keep down the long rough hairs.

In some horses the coat is of so thick, coarse, and woolly a nature, or has been left so long, it is impossible to singe it without burning it into holes, and making the horse look worse than before. In this case he must first be clipped close, and then the singeing-lamp run lightly over him; it can then be kept down by singeing, as in other horses, but his colour will be changed, as the part exposed, or rather left, will be the under part of the hair next the body, which is always of a different shade to the top hair, which, in horses that are begun early and singed frequently, from being never burnt quite down, retains its colour. After clipping and singeing the horse should have a gentle sweat, be well washed, rubbed dry, and well clothed, after which he is fit and ready for his usual work.

Some few very well-bred horses have in winter so fine a coat that beyond removing the few long, ragged hairs about their flanks and quarters, no singeing is necessary.

The Degree of Warmth necessary for the Stabled Horse.

A great outcry has been raised in this country against warm stables, and, no doubt much good has been done by the agitation on the subject; but, like all reforms, it may be carried too far; and I am inclined to believe that in many cases it has been. Warmth of some kind is essential to the health of the well-bred horse; for, though the Welsh pony or the galloway may be fitted to contend against cold, the horse of Eastern descent is certainly not qualified to do so. From a long experience, I am satisfied that a moderately warm stable, even with its attendant closeness, is better than a large and airy but consequently cold one; yet, at the same time, if artificial warmth can be given, the space and ventilation can scarcely be too free. But, *est modus in rebus*, every one must be ruled by the length of his purse; and if he cannot afford large and roomy stables with a stove kept constantly going, he will find that his horses will be far more healthy, if the stable is well cleaned and drained, and they are kept warm by shutting it up pretty closely in severe weather. In the summer the doors and windows may always be open, except in cold nights; but in severe winter weather a very slight access of fresh air can be admitted during that period of the twenty-four hours. During an experience of twenty years, with an average of three or four horses in the stable, I have not altogether had more than half-a-dozen cases of disease of any kind in my stable, over and above lameness incidental to road-work; and this with a great variety of horses of all classes and ages. Now, in general, I have had a small confined stable kept warm but clean, and with a pretty free ventilation, yet not more than the average of private stables; and the most healthy one I have ever had was the most confined and worst ventilated to all appearance, but what fresh air there was entered at the heads of the horses; and I have made the same remark in other stables. Some large airy ones were notoriously unhealthy, while others, close, dark, and confined, were the reverse; and the conclusion I have arrived at is, that horses kept

warm indoors, *if care is taken of them out*, are more healthy on the whole than those kept cool, and, as a consequence of their hardiness, as it is called, more exposed to the weather when out. If kept warm, they must assuredly be taken care of, but in that case they are healthy enough; and consequently I arrive at the conclusion that it is not the warm stable, but the neglect out of it, which produces disease. If, therefore, horses are to be thus exposed, they had better be kept cool, as in hack livery stables; but if not, there is no harm in proper warmth when united with cleanliness and caution out of doors.

Management of the Feet.

This department of stable management is often sadly neglected by the groom, who is particular enough in every other respect; but if his master is only a judge of skin and condition, he is too apt to leave the feet to take care of themselves.

An examination of the shoes should be carefully made every morning when the horse comes in from exercise; and if they are at all loose, or the clenches are too high, or the shoes are worn out, they should be renewed or removed at once.

The feet should be examined every night as the last operation, to ensure freedom from stones, stubs, nails, &c., which may have been gathered during the day, as well as to see to the safety of the shoes, and general condition of the hoofs. In no case where the feet are sound and carefully preserved against the mutilations of the shoeing-smith, will that antiquated nuisance, known as the stopping-box, be required. Healthy horn secretes the necessary moisture, which is not water, but a principle which repels it under all ordinary circumstances. The so-called dry and hard hoofs are those which are shamefully mutilated and reduced in shoeing; while those that are brittle, shelly, fleshy, and deformed are so by reason of breed or disease. They do not come within the nomenclature of sound structures, requiring special attention both in shoeing and in the stable. In all such

feet great good may be effected by the regular use of the hoof ointment. See Chapter XXIX.

One of the good results of treatment of the feet of horses is seen in the plan laid down by Charlier. Hitherto popular systems failed to expose the causes of hoof destruction. Charlier's shoe is eminently suitable for sound feet, and the method of preparing the foot for the reception of his armature strikes a death-blow to hoof mutilation. The shoe itself possesses little merit beyond being light; it is unsuited to the heavy wearers in this land. Many years ago, when Charlier was unknown in this country, his plan of hoof preparation and preservation was practised by the father of the writer of these lines, *upon all kinds of horses*, with the greatest success.

CHAPTER VI.

STABLE VICES.

STABLE vices may be considered to include the following long list of offences against the code of laws made for the stabled horse, and enforced by the stablemen. They are: 1, Getting loose from the head-stall; 2, Hanging back; 3, Leaping into the manger; 4, Turning round in the stall; 5, Lying under the manger; 6, Halter casting; 7, Casting in the stall; 8, Kicking the stall-post; 9, Weaving; 10, Pawing; 11, Eating the litter; 12, Kicking at man; 13, Biting; 14, Crib-biting; 15, Wind-sucking.

Getting loose is a very troublesome vice, and many horses are so cunning as almost to defy the efforts of the groom and saddler. If, however, a head-stall is made with a strong throat-lash, and this tightly buckled, no horse can get it off, because the circumference of the head at the jaw is always greater than that of the neck from the back of the ears to the throat. If the horse bites his halter, a chain must be substituted: but as this makes a constant noise,

it should be avoided if possible, as other horses are readily kept awake by it.

Hanging back in the collar is an attempt to get free by bursting the throat-lash or collar-rein, and in some cases great force is applied in this way—so much so that many horses have broken their hips from the sudden giving-way of the halter, letting them back so that they fall over and injure themselves irremediably. The only cure is a strong chain and a head-stall that no force will break, after trying to burst which a few times, the horse will almost always desist. If the manger is not very firmly placed, another ring should be fixed in the wall by piercing it and screwing a nut on at the back. The groom should likewise watch for the attempt, and well flog the horse from behind immediately he sees him beginning.

Leaping into the manger is generally a habit acquired by remaining too long in the stable without exercise, or from being too much threatened with the whip, as in dealers' stables. If a horse is constantly attempting it, he must be kept down by a short halter, which will not suffer him to get his nose high enough. Sometimes there is some little difficulty in bringing a horse down from his position; but, by going quietly up to his head and pushing him to the opposite side of the stall, and, at the same time, back, he may generally be managed without risk to either man or horse.

Turning round in the stall is avoided by the use of two reins, as aleady mentioned in the description of the stable and its appendages.

Lying under the manger is an awkward trick which some young horses have, apparently from trying to get out of the way and hide themselves. Sometimes they are unable to get up again from striking their heads against the under side of it when they try to rise, and they must even be drawn back by a girth round the breast before they can be rescued from the position, which has been known even to cause a fatal result. The modern low rack is a great preventive of this vice; but sometimes even with it the colt will get his head under, and the only remedy is to board all up flush. This expedient effectually prevents the head going under, and should be adopted in all bad cases.

Halter casting is the getting either leg over the halter, and so being thrown to the ground and kept there. With a rope halter, or with a chain, a very ugly wound is sometimes made in the struggles to free the leg, and often the tendons are exposed and their sheath sadly torn. The accident arises from the horse pawing with his fore-leg, or trying to scratch his head with his hind foot; while the "sinker" attached to the halter is prevented from playing properly, and so leaving the halter or collar-rein hanging loose. The spring catch is the proper guard against this accident, inasmuch as—though it does not prevent its occurrence—it removes all injurious consequences, especially where two collar-reins are used, because the leg is seldom over both in one night, and the one being liberated does not affect the other, which still prevents the horse from leaving his stall.

Casting in the stall is the result of the natural tendency which most horses have to roll completely over, and which, in a state of freedom, is not attended with any danger; though, even in the grass-field, when the ground is hard, I have known the withers seriously injured by constant attempts to roll over. When, however, the attempt is made in the stall, the horse often gets completely thrown upon his back against the wall or the travis, and is then unable to get back again, and lies powerless, yet struggling fearfully, and often to such an extent as to rupture the colon, and so cause speedy death. Sometimes the horse is found in the morning lying across the stall doubled up in the most awkward manner, and with his legs inclining towards the manger; at others, he is lying back as far as his rein will allow, with his hind legs partly in the next stall, but always in a helpless condition. There is no preventive against the accident, but it may easily be remedied when discovered, and hence the advantage of the groom sleeping within hearing of his charge. Two or three stirrup leathers buckled together, or a halter thrown over both legs, will readily draw the horse over on his side, and he then can get up without further assistance.

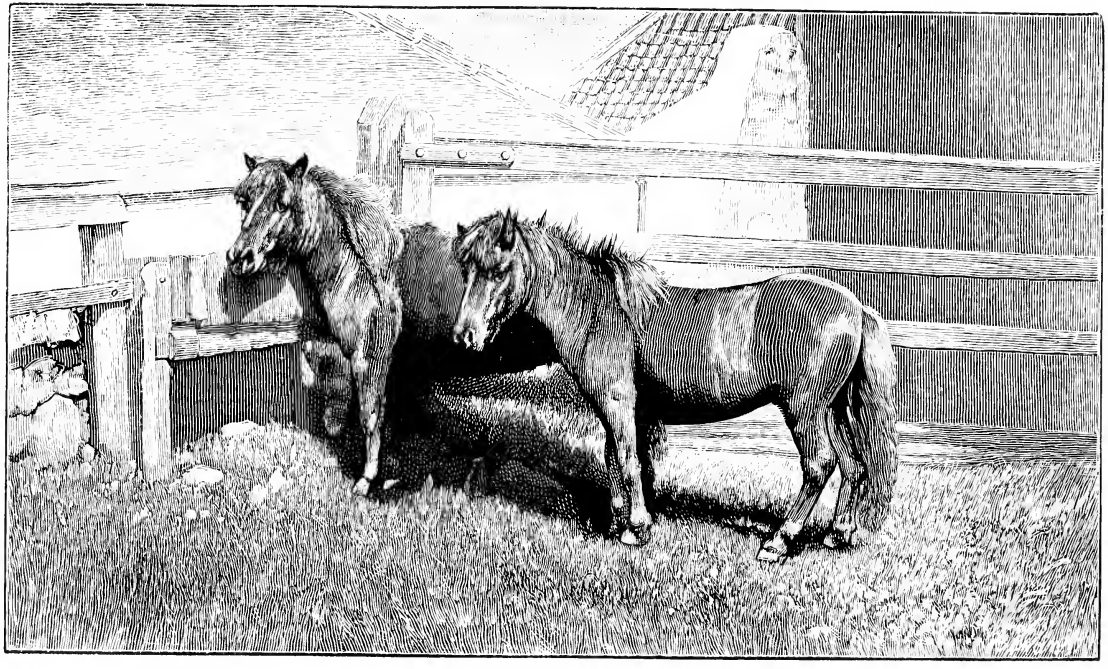
Kicking the stall-post is injurious both to the kicker and very frequently to his next neighbour, who may come in

for the blow intended for the inanimate wood. It arises from idleness, and is often continued almost incessantly night and day, except, of course, while the animal is lying down. Hard work is the best remedy, but when that is not practicable, a branch or two of furze nailed to the post will often stop the habit; though, in one case, I have known it to aggravate a mare almost to madness, and she kicked herself almost blind with fury. Mares are said to be much more subject to this vice than geldings; but, as far as my experience goes, there is little difference. Logs of wood are commonly applied to the leg, but they are not nearly heavy and severe enough; and if any good is to be done, the weight must be of iron or lead. A common heater for a tea-urn, of about 4 lb. weight, is about as good as anything; but it should not be put on until a lighter one has been tried for an hour or two, for if a horse is frightened by it, he may do himself a serious injury. When, however, he is used to the wooden log, and has got over his first alarm, the iron weight may be buckled on, and will hit him hard enough to stop his frolics in any case. A broad strap should be buckled tightly round the leg, above the pastern, and the weight suspended from it, so as to clear the coronet, which will inflame to a mischievous extent if bruised. Sometimes a weight is required for each leg if the horse kicks both stall-posts.

Weaving is a restless habit of moving the head in a quick and peculiar way from side to side of the stall, just as the wild beast does in his den. It may arise from an irritable disposition, but the fact that few "weavers" are good feeders or workers, points to some internal disorder, which in all probability is within the stomach. In such cases the character of food and work must be suitable.

Pawing is from a similar cause, and is evidenced by a constant working away of the litter with the fore-feet. The best remedy is a pair of fetters, which keep the two fore-legs close together, and prevent pawing with either. The fetters, or shackles, consist of two padded straps, large enough to encircle the small pastern-bone, and connected by a short chain of about 10 or 12 inches in length.

Eating the litter is easily prevented by a muzzle, which



GROUP OF SHETLAND PONIES. Fred by, and the Property of THE MARQUIS OF LONDONDERRY.

must be put on immediately after the hay is finished, and kept on through the night. A piece of rock salt in the manger will, however, often entice the horse from the litter, and perhaps remove the morbid and craving appetite by its restorative powers.

An inveterate *kicker* is to be very carefully approached by all parties, and sometimes requires even more than ordinary caution, in which case a chain is run through a pulley in the stall-post, and from that to his head-stall; so that by pulling it, his head may be pulled round towards the post, and by the same action his heels drawn from it, so as to allow the groom to go to his head when he is safe from the heels. Most good grooms, however, are able to take care of themselves, and, by constant practice, they learn to keep the proper distance—either near enough to make the kick a mere push, or far enough to be out of reach.

Biting is managed in the same way as kicking—using the chain, however, to draw the head to the ring of the rack-chain, instead of to the stall-post. In dressing biters a muzzle should always be put on.

Crib-biting is a bad habit. It can be remedied either by a manger of such a form as to prevent the teeth seizing it—that is, wide enough in the front edge—or by a neck-strap buckled on tightly, or by an open iron muzzle, which keeps the teeth off the edge of the manger, and is sometimes furnished with a concealed set of goads, so that, when the horse presses down, he pricks himself severely. There is no perfect cure for the vice or habit; and when a horse has contracted it, he generally loses his extra fat and becomes lean and starved-looking. Even the muzzle does not entirely remove these appearances—though, with it, the crib-biter keeps his good looks to a greater extent than without it.

Wind-sucking is very similar to crib-biting, and is prevented in the same way—the only difference being that the same noise is not made, nor is the manger seized, but there is a quiet swallowing of wind, with the muzzle pressed against the manger, instead of the noisy one experienced in crib-biting. The concealed prongs are here of much

greater use than in crib-biting, and are the only effectual remedy against the vice.

Tricks and Vices to which Horses are liable out of the Stable,

some of which arise from fear and nervousness, and others from vice or from improper breaking. All vicious and nervous horses should be avoided by all who do not thoroughly understand them. Of these rearing is the most dangerous, as a fall over backwards often leads to fatal results to the rider. A horse may rear occasionally from fear, but it more generally proceeds from vice. Several plans and bits have been suggested to cure rearers, but all are attended with more or less danger to both horse and man. They are best left to rough riders, and those who thoroughly understand the management of vicious horses, as nothing but time and work will cure them.

Kicking is another dangerous vicious habit. Like rearing, it may be cured by those who thoroughly understand horses; but even when perfectly quiet and manageable in their hands, such horses are never to be trusted with less experienced persons.

Running away is another very dangerous fault. It may arise from vice or from the horse having been at some time very seriously alarmed. In the former case, a very sharp bit and great care may prevent it; but in the latter, when the horse again becomes alarmed, nothing will stop him, as he is for the time in a state of madness.

Bucking or *Plunging* is another dangerous habit. Sometimes it arises from vice and sometimes only from freshness, the horse being above himself from want of work; in the latter case it is soon cured by putting him to daily steady work.

Jibbing either in saddle or harness is a very dangerous vice, and is always the result of bad temper. In saddle the horse rears, kicks, and rubs the rider against anything in his way. He will go anywhere and rush anywhere but in the direction in which he is wanted to go. A good thrashing will sometimes cure him, but it is not always

easy to do it, as the horse invariably jibs in the most awkward and dangerous places in which to fight him. In harness the jibber will not start, he runs back, and if whipped or punished, will plunge and throw himself down. Such animals are quite unfitted for private use.

Shying. This bad habit may arise from timidity, defective eyesight, or bad temper. If from timidity, it can only be overcome by gentle usage and allowing the horse to pass the object without taking any notice of his fear beyond patting and encouraging him; to chastise him is worse than useless and senseless. If it arise from defective vision, it will be incurable, as it will be impossible for the animal to see objects otherwise than through a distorted medium. If it arise from vice, which is frequently the case, the horse must be made firmly but temperately to pass the object at which he shies; having passed it, continue the ride; do not return and pass it again and again, as that only irritates him; and when he finds he is mastered, he will daily improve.

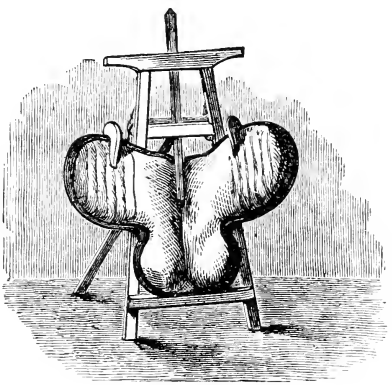
Most of the above defects and vicious habits, if not absolutely caused by bad and injudicious treatment and breaking, are often increased by it; nor is this to be wondered at, when we consider the class of men who are generally employed to break young horses, their roughness, ignorance, and often drunkenness. They break them all in the same way without any reference to their different and peculiar tempers and dispositions, whereas a little care and thought would check and frequently prevent faults and defects, which, in some cases, become incurable and highly dangerous, and render the horse comparatively unsaleable.

There are many other minor faults, too numerous to mention here, most of which are capable of cure, or, at any rate, of great amelioration, in the hands of a good horseman, but the less experienced will do well to purchase only such horses as are steady and suitable for their work.

Harness for Saddle Horses.

These consist of saddles, bridles, breast-plates, and martingales.

Saddles may be had of almost any size and weight. They may be made with either plain or padded flaps, according to the seat and fancy of the rider. Some prefer the former, and others the latter. For the generality of riders there cannot be a doubt that the padded flaps are by far the better, as they keep the knee more steadily in the proper

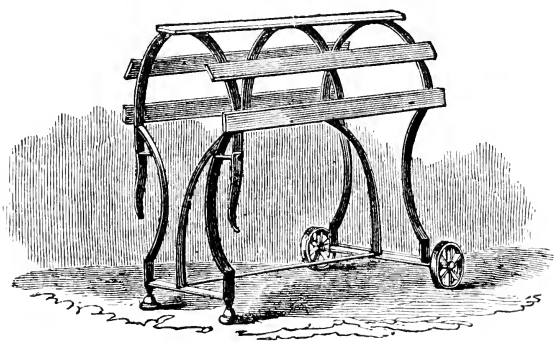


place, prevent the leg flying backwards and forwards if the horse jumps or plunges; while in hunting they are of a very material assistance in taking a drop jump, and also in steadying and recovering a horse when blundering or falling at a fence. The plain flaps have perhaps a smarter appearance, and a clever horseman may be able to ride as well on them as on the padded flaps, but that is almost all that can be said for them.

The saddle should be of sufficient length and breadth that the weight of the rider may be pretty equally distributed over it, or the back of the horse will suffer, and

saddle-galls be the result. Every hunting and riding man knows, from experience, how difficult and tedious it is to get a back right after being once galled.

The stirrups should not be small, for, in the event of a fall, the foot is more likely to hang in them. All well made saddles have spring bars, which should be occasionally oiled, that they may work easily, and release the stirrup-leather should such an accident occur. The stirrup-leather should be of the best, close and strong, not too heavy, or it will look clumsy.



Every saddle requires two girths—which may either be of the ordinary kind of the same width, with a buckle at each end, or one broad, with two buckles at each end, which is put on first, and a second, about half the width only, over it, with one buckle at each end. The latter, called the Fitzwilliam girth, is the better and stronger for hunting.

After use, the lining of the saddle must be thoroughly dried in the sun or before the fire, and then well brushed, which will keep it soft and clean.

This is particularly necessary with side-saddles. It is for want of this care and attention that so many horses have sore backs. When dirty, the saddle must be sponged clean, but not made more wet than is absolutely necessary;

after which, a little soft soap rubbed on will preserve the leather soft and pliable, and prevent it cracking.

In choosing a saddle, go to a first-rate maker; he may be a little more expensive, but you will get a good article, that will wear three times as long as an inferior one, will fit the generality of horses, will never get out of form, and will look well to the last. The price, complete, will be about 6 guineas; that of a side-saddle, about 10 guineas.

The Breast-plate or Hunting-plate is used to keep the saddle in its place when hunting. It is also of great service on horses with short back-ribs, to prevent the saddle working back, which it is very likely to do. But on the road and in the field no lady should ride without one, as it will keep the side-saddle securely in its place, and prevent it turning round should the girth get loosened, or one break.

The *Martingale* is used to steady the horse's head, and keep it in proper place.

It is generally used on loose weak-necked horses, and though of service in the hands of the experienced, it is often dangerous when used by others, as being apt to catch on the bit or buckles of the bridle, and so cause serious accidents.

The Bridle.—There is a great variety of bits suitable for different descriptions and tempers of horses, but it is impossible to describe them all in so limited a space. They all belong to one of two classes—the snaffle or the curb, and are of different degrees of severity and power.

The Snaffle is a piece of steel with a joint in the middle; it may be smooth and plain, twisted, or double-jointed. The smooth snaffle is the mildest form of bit there is, and, except just for exercise, few horses ride pleasantly in one. The twisted bit is sharper, and if drawn quickly backwards and forwards through the mouth, is very punishing. The double-jointed is the most severe; it is formed of two plain snaffles one above the other; but the joints in each not being opposite each other, cause a sharper and more narrow pressure on the tongue and lower jaw. Very few horses ride well and pleasantly in a snaffle of any kind, as they all cause a horse to raise his head and open his

mouth, to take the pressure off his tongue. In addition to this there are the Chain-snaffle, which is a very light bit, and the Gag, used for horses that get their heads down.

The Curb-bit is a lever that, by means of a curb-chain, acts upon the lower jaw, and may be made very easy or very severe according to the length of cheek or leverage, and the height of the port or arch in the centre of the mouth-piece. It is very seldom used singly, but in conjunction with some kind of snaffle, when it forms a double-rein bridle, and is by far the most useful bit. All horses go better in it, when properly handled, than in any other, as by lengthening or shortening the curb-chain, and taking up or dropping the bit in the mouth, it can be made either less or more severe, to suit most horses.

The Pelham is a curb and snaffle in one; it is a curb-bit with a joint in the middle, instead of a port. It forms a double-rein bridle, and is very light and easy.

The Hanoverian is of the same description, but with a port and a joint at each side of it. The mouth-piece is covered with small rollers. This forms a double-rein bridle of great power and severity, requiring great care and judgment.

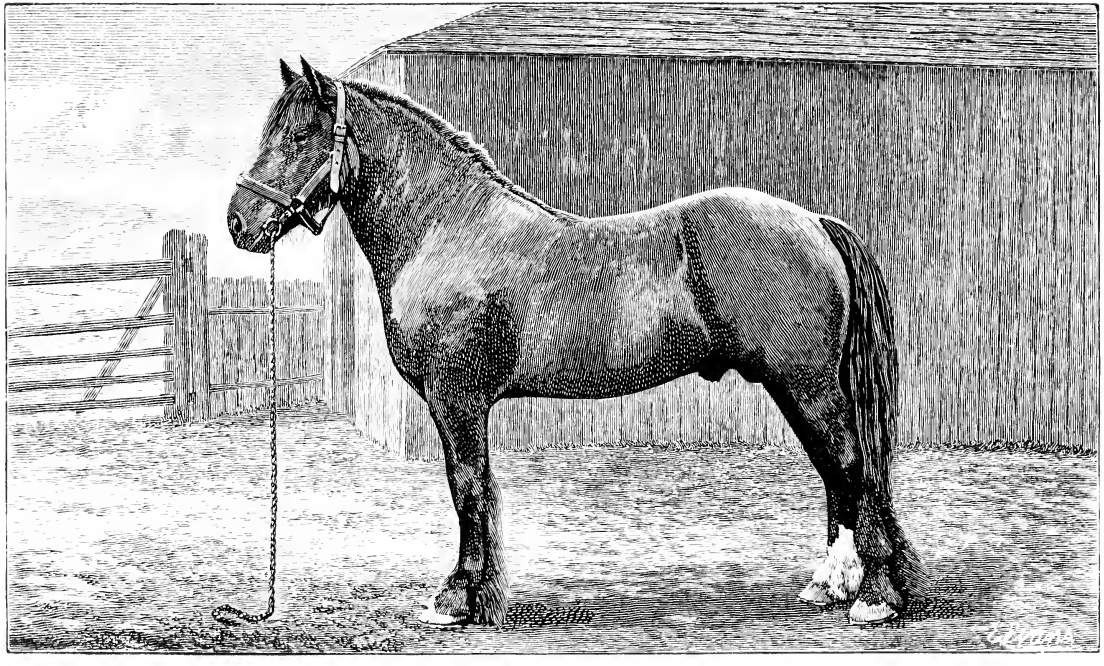
Like saddles, the bridles should be of first-rate material and workmanship; the bits sewn on to the head-pieces and reins, as being much neater and lighter than the buckles. The leather must be kept clean and pliable with soft soap, and the bits clean and bright with silver-sand and oil. Price of a snaffle bridle about 20*s.*, and of a double-rein bridle 28*s.* to 30*s.*, according to the sort of bit required.

Harnessing and Putting-to.

Harnessing.—In all cases the first thing to be done, after the horse is dressed, is to put on the collar, which is effected by turning the horse round in his stall, and slipping it over his head, with the large end upwards. This inversion is required because the front of the head is the widest part, and is in this way adapted to the widest part of the collar, which, even with this arrangement, will in coarsely-bred

horses hardly pass over the cheek-bones. Before the collar is put in its place, the hames are put on and buckled; for if this was delayed until after it had been reversed, they would have to be held on while the hame-straps were being drawn together, whereas in this way their own weight keeps them in place. They are now reversed altogether, and the pad put in its place; before buckling the belly-band of which, the crupper is slipped over the tail by doubling up all the hair, and grasping it carefully in the left hand while the right adapts the crupper. A careful examination should always be made that no hairs are left under it, for if they are they irritate the skin, and often cause a fit of kicking. After the crupper is set right the pad is drawn forwards, and its belly-band buckled up pretty tightly; the bridle is now put on, and the curb-chain properly applied; the reins being slipped through the terrets and buckled on both sides, if for single harness, or on the outside only if for double, and the driving-rein folded back and tied in the pad terret.

Putting-to is managed very differently, according to whether the horse is going in shafts or with a pole. If for shafts, they are tilted up and held there by one person, while the other backs the horse until he is under them, when they are dropped down, and the tugs slipped under or over the ends of the shafts, according to the formation of the tugs, some being hooks, and others merely leather loops. Care must be taken that they do not slip beyond the pins on the shafts. The traces are now attached to the drawing-bar, the breechen or kicking-strap buckled, and the false belly-band buckled up pretty tightly, so as to keep the shafts steady. In four-wheeled carriages it should be left tolerably loose when a breechen is used, to allow of this having free play. The reins are now untwisted from the terret, and the horse is put-to. For double harness, the first thing is to bring the horse round by the side of the pole, and put the pole-piece through the sliding ring of the hames, the groom holding it, or else buckling it at the longest hole while the traces are being put-to; as soon as this is done, the pole-piece is buckled up to its proper length, each coupling-rein buckled to the opposite horse's



CLYDESDALE COLT, "HOLYROOD" (4546), 2 years. Bred by, and the Property of THE MARQUIS OF LONDONDERRY.
First Prize at H.A.S., Edinburgh, 1893, and First at the Great Yorkshire Show at Dewsbury, 1893.

bit, the driving-reins untwisted from the terret, and the two buckled together, and the horses are ready. The leaders of a tandem or four-in-hand are easily attached, and their reins are passed through the rings on the head of the wheelers, and through the upper half of the pad terret.

Unharnessing is exactly the reverse of the above, everything being undone exactly in the same order in which it was done. The chief errors in either are—in double harness, in not attaching the pole-piece at once in putting-to, or in unbuckling it altogether too soon, by which the horse is at liberty to get back upon the bars, and often does considerable damage by kicking.

Cleaning Harness, &c.

Both single and double harness should be of the best leather and workmanship.

The harness for carriage horses of all sorts is too well known to need repetition here; the only difference is that some prefer it very neat, and only use what is absolutely necessary, while others like it covered with plate or brass, and use as much as they can possibly get on the horse. The price will vary according to the amount of plate or brass-work on it. A set of single harness will cost from £12 to £16, or even more; and a set of double harness from £25 to £35. Care must always be taken that the collars are deep enough, otherwise the horse's shoulders will suffer. The proper way to fit a collar is to hold the horse's head up as high as he usually carries it when going, and then leave room to put the hand in comfortably.

Many horses, particularly those defective in the wind, go better in a pipe collar. On coming in from use, the bits, terrets, &c., should first be removed, then the harness, if dirty, should be carefully washed clean, but not made more wet than absolutely necessary, then dried in the harness-room, but not put near the fire; when dry it should be thoroughly done over with some harness paste or polish, and well brushed bright. The bits and terrets, &c., are also cleaned and polished, and everything is ready for use.

Duties.—The duty on every horse is 10*s.* 6*d.*; on every carriage with four wheels, £2 2*s.*; on every carriage with two wheels, 15*s.*; on every man-servant, 15*s.*

CHAPTER VII.

BREEDING.

Most profitable kind—Selection of Brood Mare—Choice of Stallion—Best age to breed from—Best time for breeding—Treatment of the Mare—Management of the Foal—Directions for rearing—The Foals of Farm Horses.

The most profitable kind of Breeding.

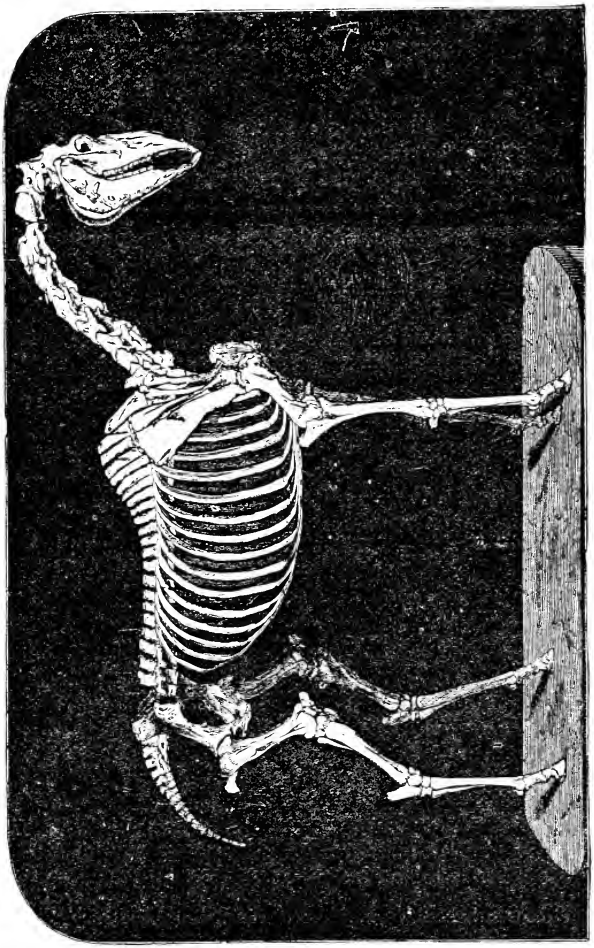
In many cases the breeder undertakes his task for the purpose of gratifying his taste for rural sports and amusements, and without regard to profit; but in most instances there will be a desire to make the speculation successful in a pecuniary point of view, as well as with regard to honorary distinction on the turf. But when it is remembered that three-fourths of the horses bred expressly for racing are worthless for that purpose, and that each colt or filly costs considerably more than £100 at three years old, it becomes a question how best to conduct operations so as to make use of the casts-off from the racing stable for other purposes. The question is solved in this way: there are certain breeds of horses which are first-rate on the turf, and also in the hunting field; and if I were selecting mares for general purposes, it would be my object to obtain those got by one or other of them. On the other hand, there are many strains of good racing blood which have never, or scarcely ever, turned out a hunter or a steeplechaser, and though such blood may suit the breeder for one purpose, it is not calculated to serve the man who

wishes two strings to his bow. From these remarks it may be gathered, that, in my humble opinion, a breeding stud may be formed which shall produce a few colts and fillies capable of racing, whilst those which are not race horses may be expected to serve as hunters of a high class. By this plan a greater number of prizes will be drawn in the lottery, and the scheme will pay far better than on the exclusive principle. So long as thorough-bred hunters are the fashion, and command such high prices, it will be found that it is a much more paying speculation to sell off the drafts at hunters' prices, than for the wretched sums which they fetch as racing stock. There are so many accidents and risks in all stud farms, that a great number will always be useless or dead, and the blanks will in proportion be numerous; consequently it is highly necessary to make the most of the materials which are available for paying the expense of the establishment. If, then, instead of selling off the rejected three-year-olds, such as are of good size are turned out, and allowed to grow and thicken till they are five, they might then be re-broken and made into hunters, or sold for that purpose, without incurring any trouble or risk; and they would fetch from £150 to £200 apiece, or in some cases considerably more.

Selection of Brood Mare.—In choosing the brood mare four things must be considered—first, her blood; secondly, her frame; thirdly, her state of health; and fourthly, her temper.

Her blood or breeding will mainly depend upon the views of the breeder—that is to say, what particular class of colts he wishes to obtain, and according to his decision he will look out for mares of the particular kind he desires to reproduce, on the principle that "like begets like," subject to the considerations above stated.

In frame the mare should be so formed as to be capable of carrying and well nourishing her offspring; that is, she should be what is called "roomy." There is a formation of the hips which is particularly unfit for breeding purposes, and yet which is sometimes carefully selected, because it is considered elegant; this is the



level and straight hip, in which the tail is set on very high, and the end of the haunch-bone is nearly on a level with the projection of the hip-bone. The opposite

form is represented in the skeleton, which is that of a thorough-bred mare, well formed for this breeding purpose, but in other respects rather too slight. By examining her pelvis, it will be seen that the haunch-bone forms a considerable angle with the sacrum, and that, as a consequence, there is plenty of room, not only for carrying the foal, but for allowing it to pass into the world. Both of these points are important, the former evidently so, and the latter no less so on consideration, because if the foal is injured in the birth, either of necessity, or from ignorance or carelessness, it will often fail to recover its powers, and will remain permanently injured. The pelvis, then, should be wide and deep—that is to say, it should be large and roomy; and there should also be a little more than the average length from the hip to the shoulder, so as to give plenty of bed for the foal; as well as a good depth of back-ribs, which is necessary in order to support this increased length. This gives the whole framework of the trunk of a larger proportion than is always desirable in the race horse, which may be easily overtopped; and hence many good runners have failed as brood mares, whilst a great number of bad runners have been dams of good race horses. Beyond this roomy frame, necessary as the egg-shell of the foal, the mare only requires such a shape and make as is well adapted for the particular purpose she is intended for; or if not possessing it herself, she should belong to a family having it. If a mare can be obtained possessing all these requisites in her own person, so much the more likely will she be to produce race horses; but if not all, then it is better that she should add as many as possible to the needful framework, without which her office can hardly be well carried out. But with this suitable frame, if she belongs to a family which, as a rule, possesses all the attributes of a race horse, she may be relied on with some degree of certainty, even though she herself should fail in some of them. Thus there are many fine roomy mares which have been useless as race horses from being deficient in the power of some one quarter, either behind or before, or perhaps a little too

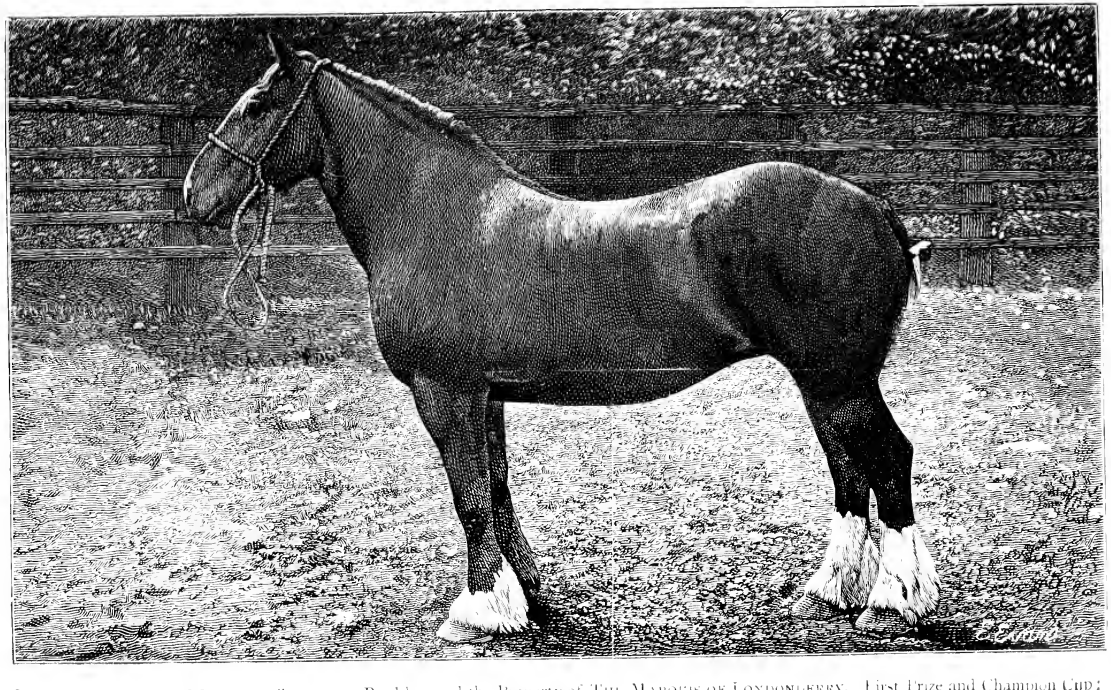
slack in the loin for their length. Such animals, if of good running families, should not be despised; and many such have stood their owners in good stead. On the other hand, some good-looking animals have never thrown good stock, because they were only exceptional cases, and their families were of bad running blood on all or most sides. No mare could look much more unlike producing *strong* stock than Pocahontas, but being of a family which numbers Selim, Bacchante, Tramp, Web, Orville, Eleanor, and Marmion among its eight members in the third remove, it can scarcely occasion surprise that she should respond to the call of the Baron by producing a Stockwell and a Rataplan.

In health, the brood mare should be as near perfection as the artificial state of this animal will allow; at all events, it is the most important point of all; and in every case the mare should be very carefully examined, with a view to discover what deviations from a natural state have been entailed upon her by her own labours, and what she has inherited from her ancestors. Independently of the consequences of accidents, all deviations from a state of health in the mare may be considered as more or less transmitted to her, because in a thoroughly sound constitution, no ordinary treatment such as training consists of will produce disease, and it is only hereditary predisposition which, under this process, entails its appearance. Still, there are positive, comparative, and superlative degrees of objectionable diseases incidental to the brood mare, which should be accepted or refused accordingly. All accidental defects, such as broken knees, dislocated hips, or even "breaks down," may be passed over; the latter, however, only when the stock from which the mare is descended are famous for standing their work without this frailty of sinew and ligament. Spavins, ring-bones, large splents, side-bones, and, in fact, all bony enlargements, are constitutional defects, and will be almost sure to be perpetuated, more or less, according to the degree in which they exist in the particular case. Curby hocks are also hereditary, and should be avoided; though many a one much bent at the junction of the *os calcis* with the

astragalus is not at all liable to curbs. It is the defective condition of the ligaments there, not the angular junction, which leads to curbs; and the breeder should carefully investigate the individual case before accepting or rejecting a mare with suspicious hocks. Bad feet, whether from contraction or from too flat and thin a sole, should also be avoided; but when they have obviously arisen from bad shoeing, the defect may be passed over. Such are the chief varieties of unsoundness in the legs which require circumspection; the good points which, on the other hand, are to be looked for, are those considered desirable in all horses that are subjected to the shocks of the gallop. Calf knees are generally bad in the race horse, and are very apt to be transmitted, whilst the opposite form is also perpetuated, but is not nearly so disadvantageous. Such are the general considerations bearing upon soundness of limb. That of the wind is no less important. Broken-winded mares seldom breed, and they are therefore out of the question, if for no other reason; but no one would risk the recurrence of this disease, even if he could get such a mare stinted. Roaring is a much-vexed question, which is by no means theoretically settled among our chief veterinary authorities, nor practically by our breeders. Every year, however, it becomes more and more frequent and important, and the risk for reproduction is too great for any person wilfully to run by breeding from a roarer. As far as I can learn, it appears to be much more hereditary on the side of the mare than on that of the horse; and not even the offer of a Virago should tempt me to use her as a brood mare. There are so many different conditions which produce what is called "roaring," that it is difficult to form any opinion which shall apply to all cases. In some instances, where it has arisen from neglected strangles, or from a simple inflammation of the larynx, the result of cold, it will probably never reappear; but when the genuine idiopathic roaring has made its appearance, apparently depending upon a disease of the nerves of the larynx, it is ten to one that the produce will suffer in the same way. Blindness, again, may or may not be

hereditary; but in all cases it should be viewed with suspicion as great as that due to roaring. Simple cataract without inflammation undoubtedly runs in families; and when a horse or mare has both eyes suffering from this disease, without any other derangement of the eye, I should eschew it carefully. When blindness is the result of violent inflammation brought on by bad management, or by influenza, or any other similar cause, the eye itself is more or less disorganized; and though this itself is objectionable, as showing a weakness of the organ, it is not so bad as the regular cataract. Such are the chief absolute defects, or deviations, from health in the mare; to which may be added a general delicacy of constitution, which can only be guessed from the amount of flesh which she carries while sucking or on poor "keep," or from her appearance on examination by an experienced hand, using his eyes as well. The firm full muscle, the bright and lively eye, the healthy-looking coat at all seasons, rough though it may be in the winter, proclaim the hardiness of constitution which is wanted, but which often coexists with infirm legs and feet. Indeed, sometimes the very best-topped animals have the worst legs and feet, chiefly owing to the extra weight they and their ancestors also have had to carry. Crib-biting is sometimes a habit acquired from idleness, as also is wind-sucking; but if not caused by indigestion, it often leads to it, and is very commonly caught by the offspring. It is true that it may be prevented by a strap; but it is not a desirable accomplishment in the mare, though of less importance than those to which I have already alluded, if not accompanied by absolute loss of health, as indicated by emaciation or the state of the skin.

Lastly, the temper is of the utmost importance, by which must be understood not that gentleness at grass which may lead the breeder's family to pet the mare, but such a temper as will serve for the purposes of her rider, and will answer to the stimulus of the voice, whip, or spur. A craven or a rogue is not to be thought of as the "mother of a family;" and if a mare belongs to a breed which is remarkable for refusing to answer the call of the



CLYDESDALE MARE, "WOODBINE," 4 years. Bred by, and the Property of THE MARQUIS OF LONDONDERRY. First Prize and Champion Cup; also the Clydesdale Horse Society's Medal at Durham County Show, 1892. First at the Northumberland Show, and First at the Border Union Show at Kelso, 1893.

rider, she should be consigned to any task rather than the stud farm. Neither should a mare be used for this purpose which had been too irritable to train, unless she happened to be an exceptional case; but if of an irritable family, she would be worse even than a roarer or a blind one. These are defects which are apparent in the colt or filly, but the irritability which interferes with training often leads to the expenditure of large sums on the faith of private trials, which are lost from the failure in public, owing to this defect of nervous system.

Choice of Stallion.

Like the brood mare, the stallion requires several essentials—commencing also like her, first, with his blood; secondly, his individual shape; thirdly, his health; and fourthly, his temper. But there is this difficulty in selecting the stallion, that he must not only be suitable *per se*, but he must also be adapted to the particular mare which he is to "serve." Thus, it will be manifest that the task is more difficult than the fixing upon a brood mare, because (leaving out of consideration all other points but blood) in the one case, a mare only has to be chosen which is of good blood for racing purposes, while in the other there must be the same attention paid to this particular, and also to the stallion's suitability to the mare, or to "hit" with her blood. Hence, all the various theories connected with generation must be investigated, in order to do justice to the subject; and the breeder must make up his mind whether in-and-in-breeding, as a rule, is desirable or otherwise; and, if so, whether it is adapted to the particular case he is considering. Most men make up their minds one way or the other on this subject, and act accordingly, in which decision much depends upon the prevailing fashion. The rock upon which most men split is a bigoted favouritism for some particular horse; thus, one man puts all his mares to Orlando; another to Surplice or the Flying Dutchman; although they may every one be of different blood and form to the others. Now, this cannot possibly

be right if there is any principle whatever in breeding; and, however good a horse may be, he cannot be suited to all mares. Some, again, will say that any horse will do, and that all is a lottery; but I think I shall be able to show that there is some science required to enable the breeder to draw many prizes. That the system generally followed of late is a bad one I am satisfied, and with the usual and constant crossing and re-crossing, it is almost a lottery; but upon proper principles, and with careful management, I am tempted to believe that there would be fewer blanks than at present.

In choosing the particular blood which will suit any given mare, my impression always would be, that it is desirable to fix upon the best strain in her pedigree, if not already twice bred in-and-in, and then to put to her the best stallion available of that blood. In some cases, of course, it will happen that the second best strain will answer better, because there happens to be a better horse of that blood to be had than of the superior strain, which would otherwise be preferred. If, on the other hand, the mare has already been in-bred to the extent of two degrees, then a cross will be advisable; but I am much inclined to believe, from the success of certain well-known cases, that even then a cross into blood already existing in the mare, but not recently in-bred nor used more than once, will sometimes answer. Upon these principles I should, therefore, look for success: as the production of good winners has so often followed this practice as to make its adoption exceedingly tempting.

The choice of particular stallions, as dependent upon their formation, is not less difficult than that of the mare, and it must be guided by nearly the same principles, except that there is no occasion for any framework especially calculated for nourishing and containing the fœtus, as in her case. As far as possible, the horse should be the counterpart of what is desired in the produce, though sometimes it may be necessary to select an animal of a breed slightly exaggerating the peculiarity which is sought for, especially when that is not connected with the preponderance of fore or hind-quarters. Thus, if the mare

is very leggy, a more than usual short-legged horse may be selected, or if the neck is too short or too long, an animal with this organ particularly long or the reverse, as the case may be, should be sought out. But in all cases it is dangerous to attempt to make too sudden an alteration with regard to size, as the effort will generally end in a colt made without due proportion of parts, and therefore more or less awkward and unwieldy.

In constitution and general health, the same remarks exactly apply to the horse as the mare. All hereditary diseases are to be avoided as far as possible, though few horses are to be met with entirely free from all kinds of unsoundness, some the effect of severe training, and others resulting from actual disease, occurring from other causes. With regard to fatness, there is an extraordinary desire for horses absolutely loaded with fat, just as there formerly was for over-fed oxen at Christmas. It is quite true that the presence of a moderate quantity of fat is a sign of a good constitution, but like all other good qualities, it may be carried to excess, so as to produce disease ; and just as there often is hypertrophy, or excess of nourishment of the heart, or any bony parts, so is there often a like superabundance of fat, causing obstruction to the due performance of the animal functions, and often ending in premature death. This is in great measure owing to want of exercise, but also to over-stimulating food ; and the breeder who wishes his horse to last, and also to get good stock, should take especial care that he has enough of the one and not too much of the other.

In temper, also, there is no more to be added to what I have said relating to the mare, except that there are more bad-tempered stallions met with than mares, independently of their running, and this is caused by the constant state of unnatural excitement in which they are kept. This kind of vice is, however, not of so much importance, as it does not affect the running of the stock, and solely interferes with their stable management.

Best Age to Breed from.

It is commonly supposed that one or other of the parents should be of mature age, and that if both are very young or very old the produce will be decrepit or weakly. A great many of our best horses have been out of old mares, or by old horses—as, for instance, Priam, out of Cressida, at twenty; Crucifix, out of Octaviana, at twenty-two; and Lottery and Brutandorf, out of Mandane, at twenty and twenty-one; Voltaire got Voltigeur at twenty-one; Bay Middleton was the sire of Andover at eighteen; and Touchstone got Newminster at seventeen. On the other hand, many young stallions and mares have succeeded well, and in numberless instances the first foal of a mare has been the best she ever produced. In the olden times, Mark Anthony and Conductor were the first foals of their dams; and more recently, Shuttle, Pope, Filho da Puta, Sultan, Pericles, Oiseau, Doctor Syntax, Manfred, and Pantaloon have all been first-born. Still these are exceptions, and the great bulk of superior horses are produced later in the series. The youngest dam which I ever heard of was Monstrosity, foaled in 1838, who produced Ugly Buck at three years old, having been put to Venison when only two years of age. Her dam also was only one year older when she was foaled; and Venison himself was quite a young stallion, being only seven years old when he got Ugly Buck; so that altogether the last-mentioned horse was a remarkable instance of successful breeding from young parents. As in most cases of the kind, however, his early promises were not carried out, and he showed far better as a two-year-old, and early in the following year, than in his maturity. Such is often the case, and, I believe, is a very general rule in breeding all animals, whether horses, dogs, or cattle. The general practice in breeding is to use young stallions with old mares, and to put young mares to old stallions; and such appears to be the best plan, judging from theory as well as practice.

Best Time for Breeding.

For all racing purposes an early foal is important, because the age take date from the 1st January. The

mare, therefore, should be put to the horse in February, so as to foal as soon after 1st January as possible. As, however, many mares foal a little before the end of the eleventh month, it is not safe to send her to the horse before the middle of the second month in the year. For ordinary horses, colts foaled in March are generally hardier and stronger than those foaled afterwards.

Treatment of the Mare.

The mare should be allowed to be at large in the fields during the day-time, as exercise is of the greatest consequence to her health; and she should be carefully kept from the sight of any object which can terrify or distress her, such as pig-killing. When the mare is near her time, she shows her state by the filling of the udder, and by the falling in of the muscles on each side of the croup, which the farriers call the "sinking of the bones." When these signs appear the mare should be constantly watched, in order that assistance may be given her if there is any difficulty in the presentation.

As soon as the foal is born the mare should be allowed to clean it, and the secundines are removed by the attendant; after which the mare should have a little warm gruel, and, if very much exhausted, one to three ounces of nitrous ether may be added, and repeated in six or eight hours, if needful. It often happens with the first foal that the mare will not take to it, and not only refuses to clean it, but actually denies it the proper nourishment from her teats. When this is the case, the man should milk the mare and soothe her, and after her udder is somewhat empty, and she is relieved, she will generally allow the foal to suck. They should never be left alone till this has taken place, as it is dangerous to do so, for fear of the mare doing a fatal injury to her offspring. Before the coat of the foal is dry, the mane should be combed all on one side; by which precaution that ragged unsightly look is avoided which it has if part hangs one side and part on the other. For the first twenty-four hours, nothing besides warm gruel and a very little hay should be given to the mare; but when the secretion of milk is fully established

she requires corn, bran mashes, with malt, carrots, Swedes, lucerne, or green food in some shape, according to the season of the year.

Management of the Foal.

Handling the foal should be commenced as soon as he is born, because it is at that time that he is most easily rendered tractable, and regardless of the presence of his attendant, who should make a practice of rubbing his head, picking up his feet, &c., long before he wants to do anything with those parts. But if these acts are postponed till they are really wanted to be done, the colt is wild and unmanageable, and neither physic nor anything else can be administered without a degree of violence very dangerous to its welfare. The foal is very liable to diarrhœa, which should at once be checked by a drench of rice-water, with one or two drachms of laudanum; this will always stop it if repeated after every loose motion. The sun should in all cases be admitted to the box, whether in winter or summer, and without it no young animal will long be in health. If the weather is very severe, with wet as well as cold, the upper half only of the door should be opened while the sun is out; but if the weather is dry, the mare and foal may be allowed to run into the yard, or, if not very cold and frosty, into the paddock for a short time. By the end of the month the foal will begin to eat kibbled oats, which may be given in its own low manger, and with the mare tied up to hers. As many of them as the foal will eat will do good; and it never happens, that I have heard, that a young foal will eat more than enough of this food, which is the mainstay of the young racer. Much of the success of racing stock depends upon their early forcing by means of corn; and as far as he is concerned, the mare as well as himself can hardly have too much, consistently with a continuance of health. When the mare is tied up the halter should not be longer than necessary, nor should it be fastened to a low ring, as it has often happened that the foal has become entangled in it when low, and has been ruined by its own struggles, or those of its mother. At six months

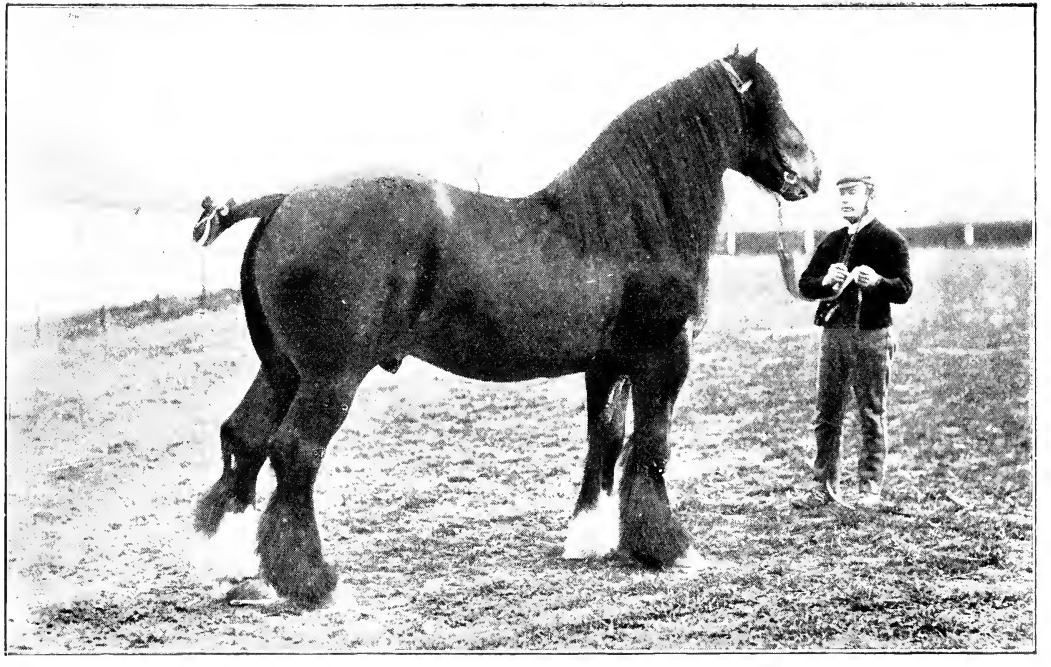
old the foal is usually weaned, previously to which he should wear a light and well-fitting head-collar, by which he may be led about with a length of webbing attached to it by a buckle. This is more easily done before weaning than after, as the mare may always be made an inducement to the foal, and it will thereby be half coaxed and half led by a little manœuvring, whereas if entirely alone, the foal will struggle in order to escape, and will not so easily be controlled. Two quarterns of kibbled oats may now be given to the foal during the day, which, with the grass of summer, will keep him in high flesh, and by this time he ought to have grown into a very good-sized animal. By this treatment the foals are made strong and hardy against the advent of the winter season, during which time their progress is not nearly so fast as in the summer; and, in spite of every precaution, there are constantly drawbacks in the shape of colds, dysentery, &c. Feeding in this mode is the great secret in rearing racing stock; and though cow's milk, steamed turnips, &c., will make the yearling look fat and fleshy, you will never see that appearance of high breeding and condition which is given by corn, nor when put into training do they pass through that ordeal in the way which corn-fed colts and fillies may be expected to do. At this age, when fed in this way, foals are as mischievous as monkeys, and great care should be taken that they have nothing in their way which can possibly injure them. Brooms, shovels, pikes, and buckets must always be kept away from their reach, and all gates and fences must be carefully put in order. Indeed, with every precaution, they will strain themselves in their play; and if all these points are not attended to, the consequence is almost sure to be fatal to life or limb. During the winter young racing stock should all be carefully housed at night; and their corn may be increased to three quarterns a day as soon as the grass fails, with plenty of good sound old hay, and occasionally a few carefully sliced carrots or Swedes. During all this time they should still be constantly handled and led about; and when removed from one pasture to another, they should always be caught and led by the

length of webbing. The absence of this precaution is a fertile source of accidents, while its adoption is only an instance of that constant handling which must be attended to even were no removal necessary. These remarks will carry on the treatment of the yearling to the time when he is broken-in and put into training. At this time—that is, in the second summer, and as soon as there is plenty of grass—the yearling should begin to assume the appearance of the horse, with arms and thighs well developed, and with a fair allowance of fat, which, though not necessary for racing purposes, is always an indication of high health, and will make its appearance on the ribs of a stout and healthy colt in spite of all the exercise in the shape of frolics and gallops which his high spirits induce him to take. During the early spring months this cannot always be expected, from the nature of the food; but after May the flesh ought always to be rather full and round than wiry and free from fat, which latter condition indicates a delicacy of constitution unfavourable to the purposes of the race horse.

Physicking the yearling or the foal is sometimes necessary, when he is getting off his feed, or is bound in his bowels, or his eyes are becoming inflamed, or otherwise indicating that he is over-corned. This is a very common state of things, and the remedy is a dose of the common aloetic ball, for which see the "Diseases of the Horse," for the dose and mode of administration. About one-quarter of an ordinary ball is the smallest dose likely to be beneficial to the young foal.

The following useful directions for the rearing of the foals of cart horses are extracted from Mr. Morton's "Farmer's Calendar."

"Foals dropped, as they should be, before the middle of May may be weaned about Michaelmas, when the mare will be required for the labours of the farm. When, however, the mare's milk is deficient in quantity or indifferent in quality, it is often advisable to wean the colt much earlier. If this has to be done before the young animal is many weeks old, it must be supplied several times daily with cow's milk, to which a little sugar is added. Besides



SHIRE STALLION, "MARS VICTOR" (5839) S.H.S.B. Winner of Two First and Three Second Prizes, 1888-93.
The Property of SIR WALTER GILBEY, BART.

picking a little grass or clover, the young animal must further be early taught to eat a few bruised oats, some steamed bran, or other such food. At Michaelmas, the foal, if healthy and well grazed, will be strong and in good condition, and the progress thus made must not be lost. In many parts of England, and especially where old pastures abound, young horses, often promising and well-bred, are stunted in growth and spoilt by being kept in the fields late in autumn, and even during winter exposed to the inclemency of all weathers, and receiving nothing but the coarse innutritive grass they gather. This is wretched parsimony. There can be no greater mistake than to stint young animals, or allow them to lose during winter the condition acquired in summer. So soon as the October nights get long and cold, foals should be brought into the yards or sheds, or placed in a field with a good open hovel into which they may run at pleasure. They must further be supplied, at least once a day, with some hay and a few bruised oats mixed with chaff or bran. If the weather continue tolerably fine, they will thrive better if thus allowed to be in the fields during the day, and protected at night. When frost and snow set in, the foals may be placed in their winter quarters. A good yard, sufficiently roomy for exercise, and provided with an open shed, is preferable to a loose box. Colts and cattle seldom agree well in the same yard. The colts, full of play, chase and disturb their more placid neighbours, which occasionally retaliate by a dangerous thrust of the horn. Barley and oat straw, frequently varied with an occasional allowance of bean or pea straw, may constitute the bulk of their winter food. A few handfuls of hay once a day are well bestowed, and are absolutely essential for weakly or late foals. A few sliced Swedes, mangolds, or carrots, regularly given with some chaff, cut straw, or hay, keep the bowels open, and add to the general health. But besides this, and especially if the colts live more on straw than hay, they require some food of more nutritive character to keep them growing. For this end, supply to each foal daily three or four pounds of oats, which are best given cracked or bruised, along with several handfuls

of chaff, and divided into a morning and evening feed. An occasional bran mash is also advisable; a pound of bruised oil-cake daily, given with the oats, tends to keep the skin in a healthy state, and is especially useful when roots are not to be had; a piece of rock salt in the rack or manger contributes to digestion and health, whilst a sufficient supply of good water is fully as essential as good food. In early spring, and before there is sufficient grass to afford a full bite, colts may be advantageously turned out during the day, and brought in at night. Their management during the summer requires less notice. If they are to come to good size they must still be liberally dealt with, placed on good grass, their pasture varied occasionally, and ensured at all times a good supply of water. In the succeeding winter their age and strength enable them to stand more hardships, and their fare need not be so nutritive as during their first winter. Good fresh straw, of varied sorts, a liberal supply of sliced roots, with corn, bran, and chaff as before, will generally suffice without hay to keep them growing in sound health and improving condition."

For the rearing of young horses it is necessary that farmers have enclosures or conveniences for letting their colts run out during fine winter weather, or an open shed in their pasture where they can receive their allowance of corn or hay, and, at the same time, be sheltered from the inclemency of the weather. Nothing can be more pernicious to horses' feet than the heat arising from litter, to which colts are subjected when fed and reared in yards and boxes.

There is no principle of greater importance in horse feeding than the liberal feeding of foals during their whole growth. They ought to have a due proportion of cooked food when they are changing their teeth. The plan of manger-feeding, that is, giving crushed oats and beans, cut hay and straw, mixed together, at the time they are changing their teeth, would prevent them becoming reduced to the low state we see them at that period.

CHAPTER VIII.

BREAKING.

Paddock — Leading tackle — Shoeing — Tying-up in the stable — Breaking — Mouthing-bit — Breaking to harness — Breaking and teaching a Hunter — Breaking the Lady's Horse.

THE breaking of colts is generally commenced in warm summer weather, and there is no danger in allowing the colt to be at liberty during the day, at such hours as are not required to be occupied by the breaker's instructions.

It is necessary to have a series of airy boxes, separated from one another, and at least 18 ft. by 12 ft., with a very free circulation of air. These are much better made open to the roof, as they are never used in cold weather for horses, and will then serve for any other kind of stock if required ; but at all events they should now be as airy as it is possible to make them. Many people object to the use of litter at this period, as being different to the cool grass to which the colt has been accustomed, and recommend tan as a much better kind of material for the floor of the box. I am inclined to think that there is great reason in this objection, and that the latter article is less likely to produce that contraction of the feet which so commonly occurs in the horse in training. A shady paddock, with as soft a turf as possible, should be provided ; and here a colt may be turned out the first thing in the morning for an hour or two, and again at night for the same time, leaving the middle of the day for the breaker's manipulations. This plan also provides for the gradual alteration of diet, as the colt will always pick a little grass when turned out, and will only eat his hay during the long night ; whilst his corn he has long been accustomed to, and will still continue to relish.

Leading Tackle.

Leading with the cavesson on is the first thing to be practised, and it should be continued for two or three weeks without any further attempt at breaking, if there is plenty of time, and full justice is to be done to the colt. A roller is put upon the colt, and a crupper, with long hip-straps, by the presence of which he becomes accustomed to a loose sheet, or any other arrangement of clothing in his subsequent work. With this tackle on, and long boots on his fore-legs to guard against his striking them, the colt is led about the country, either by the breaker on foot or mounted on a steady hack; and for a week he may generally be confined to a soft turf, which will not require his being shod. Even on such ground as this he will be gradually accustomed to carts, waggons, droves of sheep, oxen, &c., and will daily acquire more confidence in himself and in his leader. No bit should be put in his mouth as yet, for its too early use, while he is still shy and inclined to struggle, only makes him more timid, and by far less manageable than with the cavesson alone.

Shoeing.

Shoeing must be commenced as soon as the colt is in a state to be taken on the road, because it will often happen that he will be inclined to jump and plunge on the meeting of unaccustomed objects; and if his feet are unshod he will break the crust, and do an amount of injury which it will take many weeks to restore. It is better, therefore, to put some short shoes on his fore-feet; but his hind feet may still perhaps be left in their natural state for some time longer. I do not myself see the advantage of this delay, but it is very commonly practised with young racing stock: and with wild or badly-handled colts it is often necessary, from the greater resistance which they make to the blacksmith behind than before. The shoes or tips should be nailed on very carefully, and they should be very neat and light in their make; the feet also should afterwards be regularly examined, and the shoes removed every three weeks. It is

a very common practice for the blacksmith to cut out the heels of these colts, but I am satisfied that, by the use of tips only, the heels may be left in a state of nature, and will need no cutting into shape. With the frog they are best left to grow and fulfil the functions which Nature has assigned to them.

Tying-up in the Stable.

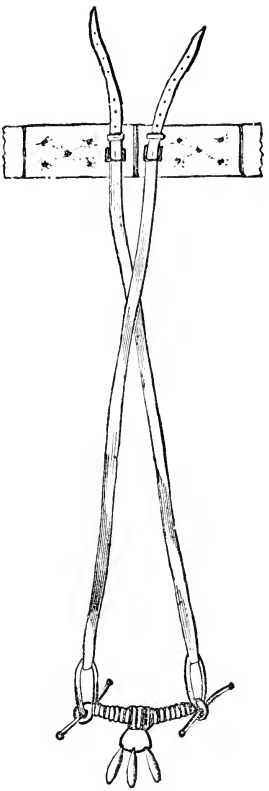
The next process is the tying-up in the stall, which the colts may now be accustomed to, inasmuch as they have fully proved the power of the halter or leading-rein in their struggles to avoid passing objects ; and they will not therefore fight much when tied up in the stable. The head-stall should fit very closely, and the throat-lash be sufficiently tight to prevent the colt from pulling it off in his efforts to get free ; for if the young animal finds he can effect his object once, he is a long time before he ceases to try it again. The colt is often very fidgety : if so, he must be at once compelled to stand still, by the use of wooden balls attached to the fetlocks by leather straps, which soon accustom him to a steady position, from the blows which they inflict upon him when he struggles or moves rapidly from side to side. A breast-girth may also be put on as a forerunner of the breast-cloth ; and it will also serve to prevent the roller, which is constantly worn, from getting back under the flank, and thereby irritating the wearer. All the ordinary stable practices may now gradually be taught, such as washing out the feet, dressing, hand-rubbing the legs, &c., and the colt should be made to turn from side to side of his stall at the wish of his attendant groom, who may easily conduct the whole process without the aid of any regular breaker, unless the temper of the colt is such as to demand extraordinary skill and address ; and even here the groom accustomed to thorough-bred colts is often a better hand than the colt-breaker, who is engaged in breaking all sorts of animals, and will not bestow sufficient time upon the valuable racing colts and fillies. Now, without full time it is impossible to bring these young things into subjection, and the consequence is that their tempers are

ruined, and they are rendered unfit for the purpose for which they are otherwise well qualified. Their feeding is so high that they are full of spirit, and will fight to the death if they are made to resist by ill-treatment or hasty breaking; it is, therefore, more by coaxing and gradual leading on step by step, from one point gained to another which is to be overcome, that this animal is vanquished, and made at last to yield his powers to the guidance of a young lad of twelve years of age, or even less.

Breaking.

Lunging may now be commenced, which will require the aid of a second hand, in order to compel the colt to progress in the circle by threatening him with the whip behind him. The cavesson, boots, roller, crupper, &c., are all put on, and a long leading-rein of webbing is attached to the ring in the nose of the cavesson, just as if the colt was going to be led out as usual. But instead of merely leading, the colt is made to walk round a circle on some piece of soft turf; and then, when he has learnt to do this kindly, he is made to canter slowly round, the assistant walking behind him until he will progress by himself, which he soons learns to do. As soon as he has gone round the circle in one direction a dozen times or so, he may be turned round and made to reverse it, which prevents giddiness, and also any undue strain upon either leg. This process is repeated at various times throughout the breaking, and is the best mode of keeping the colt quiet by giving him any amount of work on the canter or gallop. It is not, however, used for the same purpose as in the ordinary breaking of hacks and harness horses, where it is made a means of getting them upon their haunches; an alteration from a state of nature which it is not desirable to effect in the race horse. On the contrary, it is often necessary to make him extend himself still more than he otherwise would, and the less he is upon his haunches the better. The bit, therefore, is never used in his mouth as a means of putting him back upon his hind legs; whilst it is, on the other hand,

used more to make the horse extend himself by playing with it, and slightly resisting its tendency to confine his mouth.

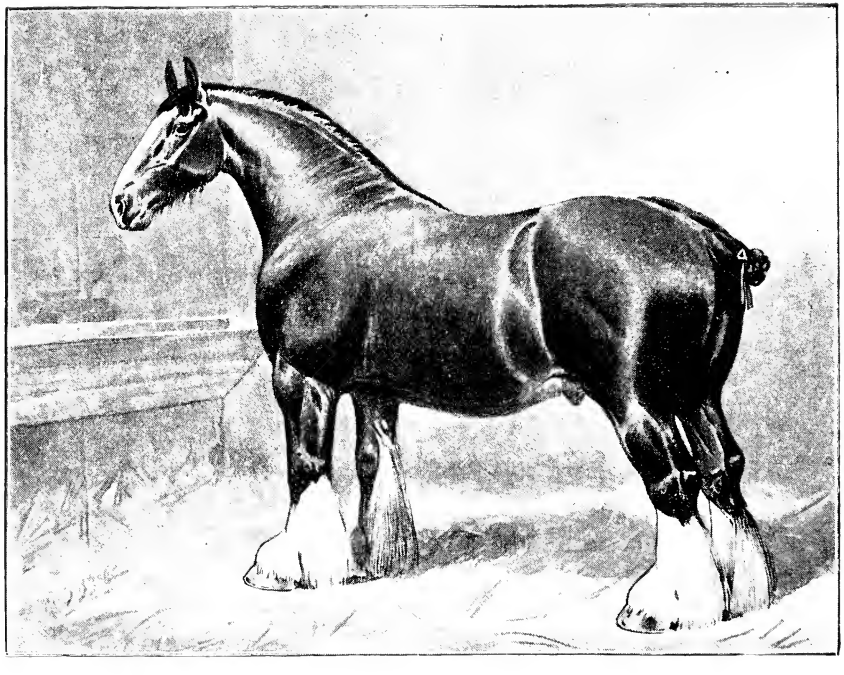


The mouthing-bit may now be put on, and its construction and form are of the utmost importance to the future delicacy of mouth which is so essential to the action of the race horse. In no kind of horse is the snaffle bridle so desirable as in the race horse, in which a curb is always a means of making him gallop in too round a style; and yet when he pulls very strongly, this is a less evil than to let him get away with his rider, and either bolt out of the course or destroy his chance by over-running himself early in the race.

Hence it is doubly necessary to guard against making the angles of the mouth sore, for if once they get into that state they are almost sure to become more or less callous and insensible. But if, during breakage, a snaffle of any kind, large or small, is used, this result is almost sure to occur, either in the horse's early fighting with his bit, or when "put upon it" in the stable. Instead of a snaffle, a bit without a joint is the simple remedy for all this. It should be made in the form of a circle, or a segment of a circle, and with keys as usual hanging from its centre. This circular or segmental form is better than the straight bit, upon which the colt is apt

to pull on one side, and to get an uneven mouth; whereas, when standing in the stable, and the reins are buckled to his roller, crossed over his withers, he can never do otherwise than get an even pull upon all parts of his mouth, whether he puts his lips close to one side of the bit or the other.

This is a very important point in breaking all colts, and in racing stock it is doubly so, because of the necessity of preserving that delicacy of sensation without which they can never be taken round corners, &c., except by lying out of their ground, and hence losing a considerable distance. But with this bit the mouth is gradually made, and without producing soreness in any part *which afterwards takes the bit;* and this is the great feature in its use, for as the tongue and gums take its pressure chiefly, so the angles of the mouth only touch it at the will of the colt, and it is when playing with it that they do touch at all, and then only to such an extent as to avoid pain to themselves. This bit, then, may be used on all occasions without fear until the colt is fit to take his gallops, when a strong snaffle may be substituted, and gradually supplanted by that small and fine kind called the Racing Snaffle, but which need not be nearly so small for the horse broken to the segmental bit as for one "mouthed" to the ordinary breaker's snaffle. After the bit has been put in the mouth, no attempt at first should be made to induce the colt to play with it; but it may be suffered to remain in the mouth while he is led about by the cavesson, and without any side-reins being attached. When this has been done for a day or two, the side-reins are buckled on, and are attached also to the buckles in the roller, crossing them over the withers. At first they may be drawn up very slightly, so as just to prevent the colt from putting his head into his usual position, and in that form he may be left in his box for an hour a day, besides the usual amount of walking out of doors with the bridle on. They may now be gradually tightened a hole or two per day, and also more so in the box than when led out, when the tightening should be very gradual indeed. Some colts very soon begin to champ the bit, and play with it, whilst



SHIRE STALLION, "NYN HITCHIN DUKE," 2 years. First at the London Show, 1893.
The Property of MR. A. GRANDAGE.

others are often sulky for a day or two, and hang upon it steadily, with the intention of freeing themselves. All, however, at last begin to champ, and when this is freely done, the breaker may teach the colt the intention of the bit, by making him stop and back when out of doors, by its means. The rings on each side should be taken hold of evenly by both hands, and the colt made to stand or back by steady pressure, but without alarming him. Kindness and gentle usage, with occasional encouragement, soon accustom him to its use, and he only wants ten days or a fortnight in order to obtain the desired result of its presence in the mouth, which is called "getting a mouth," and which is merely the giving to the sense of touch in the lips an extra degree of delicacy. When this stage is completed, and the mouth is quite under command, so that the colt will either come forward or backward by drawing his head in those directions, with the bit held in both hands, the colt is ready for backing. During the whole progress of breaking, daily slow lunging and plenty of walking exercise should have been practised, so that the colt is not above himself, but is more or less tired each day.

Before actual backing is attempted the saddle should be put on, and it should always be a roomy one at first, well stuffed, and fitting accurately, so as to avoid all painful pressure. The withers especially should be closely watched, and if high and thin, the saddle should be proportionally high at the pommel. The roller has been hitherto the only kind of pressure round the chest, but it has gradually been tightened from time to time, so as to prepare the colt for the subsequent use of the girths which are required to retain the saddle in its place. This should be put on at first with the girths quite loose, and with a crupper in addition, because, having already worn one, the tail has become accustomed to its use, and it often prevents the saddle from pressing with undue force upon the withers, which are very sensitive and easily made sore. The colt should be walked out and lunged for a day or two with the saddle on before he is mounted, so as to accustom the parts to its presence; and

it is even desirable to increase the weight of the saddle by placing upon it some moderately heavy substance of two or three stones weight, such as trusses of shot, or the like, gradually making them heavier, but never putting more than the above dead weight upon the saddle.

When the colt has thus been thoroughly seasoned, he may be taken out and well lunged till he is tired, still having his saddle on; and during this exercise the breaker will occasionally bear considerable weight upon each stirrup, and flap them against the saddle, with the object of making a noise, to which the colt should be accustomed. It is a very good plan to have a leather surcingle made to go over the saddle, and to attach the buckles for the side-reins to this, instead of having them sewn on to the saddle itself. When all is ready, and the colt is tired by his lunging, &c., he may be taken into the rubbing-house, as being close to the exercise ground, and there the breaker himself, or one of the lads, may be put upon the saddle, using him, as in all cases in young horses, with great gentleness, and giving him constant encouragement by the hand and voice.

Mounting is much better accomplished in the stable than out, and causes much less alarm, because the colt has been always accustomed to be more handled there, and is less inclined, therefore, to resist. The lad, or breaker, should get up and down again several times, and if the colt is good tempered he will generally allow all this to be done without the slightest resistance. In mounting there should be very little spring made, but the lad may hang about the horse as if fondling him, and bear his weight upon the saddle; then place one foot in and hang on steadily; when, if this is borne, the weight may be taken off for a minute or two, and then the lad may very gently and insensibly almost raise himself up to the command of the saddle, after which he may steadily turn his leg over, and is then seated. When the lad has sat quietly upon his back for a few minutes, the side-reins having already been buckled to the leather surcingle, two additional reins may be attached for his use, though the chief dependence at first must be placed upon the breaker

himself, who leads the colt, as before, with the cavesson and webbing. With this the mounted colt is now led out, and walked about for an hour or more; after which he should be returned to the stable, and then the lad should dismount; and on no account should this be attempted at first out of doors, for it has happened that on getting off there has been a fight to get on again, which has resulted in victory to the horse, whereas in the stable it can always be managed, and with the thorough-bred colt it is seldom wanted elsewhere, until he is quite used to it. If there is no stable at hand with a door high and wide enough for this purpose, the colt may be mounted in the paddock, the breaker being very careful to engage his attention, and a third party being on the off-side to assist in keeping the colt straight and the saddle from giving way while the weight is being laid upon the stirrup. Most colts give way at first to this one-sided pressure, but they soon learn to bear up against it, and finally they do not show any annoyance at all. It will be found that any colt may be more readily managed by two people in a roomy stable than by three out of doors, where he is on the look-out for objects of alarm, and is always more ready to show fight: the only difficulty is the getting clear of the door, which should be wide and high; and if it is the contrary, it offers an obstacle to the plan, which must prevent its adoption.

The mounted lad should at first sit steadily and patiently still, and should not attempt to use the reins, which might indeed be well dispensed with, but that few riders could balance themselves without holding something. I have found it a good plan to buckle them to the cavesson rather than to the bit, in those cases where the hands of the rider were not very light. The colt on leaving the stable often sets his back up, and perhaps plunges, or attempts to kick, which he seldom does in the stable, and less frequently in leaving it than when he is suddenly mounted in the field. If he does this the breaker should speak severely to him, and either keep down his head or the reverse, according to whether he is attempting to rear or kick. It is for the latter vice only that the rider

requires the rein to the bit, as it serves to keep the colt quiet if the bit is suddenly checked when he gets his head down before kicking. But in rearing, the lad is likely to do mischief with it, and, on the whole, it is better, I think, to avoid all chance of using it improperly, unless the rider is very cautious and accustomed to the business of colt breaking. When the young animal is quiet and submissive after several days of leading about, the lad may take command of the bit, as well as having the reins entrusted to him, the breaker still keeping the long webbing attached to the cavesson, and being always prepared to assist the lad, who, however, should now begin to try to turn the colt and stop him at pleasure, taking a rein in each hand, and using them wide apart, with the aid of his voice and heel.

As soon as it appears likely that the lad can control his charge, the cavesson may be taken off, and the colt placed in a string of horses which are so steady as not to give occasion by their example for the colt beginning to plunge.

During the course of breaking it is always safer to keep the colt rather under-fed with corn, and until he is able to begin his cantering exercise he will scarcely bear an increase ; but much will depend upon his temper ; and if he is inclined to fret he will often lose flesh, and will demand more, rather than less, corn than usual. Bad-tempered horses, however, will always require light feeding during breaking, and extra time, as well as care, must be bestowed upon them. This subject is better understood now than it used to be, and fewer horses are spoiled than was formerly the case ; still, however, there is often room for improvement, and the number of horses which are mismanaged at this time is by no means small. Thorough-bred horses will not bear bad treatment, in general, though some are certainly of such savage tempers by nature as to require to be cowed ; still these are the exceptions ; and the vast majority will, by early handling, and cautious tackling and mounting, be broken almost without a single fight or difficulty of any kind. If they find themselves hurt by bit or saddle, or by the crupper

occasioning a sore, they show their dislike to the pain by resisting, setting up their backs, and refusing to progress quietly; but, unless there is something wrong, they will submit to being backed and ridden much more readily than the colts of the common breeds, which have seldom had a head-stall on their heads till a few days before they are backed. I have more than once ridden thoroughbred colts in tolerable comfort within a week or ten days of their being first bitted; but it is a bad plan, and the longer time their mouths are allowed to become accustomed to the bit, the better they ultimately turn out. It will be many months before they are to be depended on under any circumstances; and when they get an increase of corn they are almost sure to attempt some kind of horse-play; but the boys easily contend against this, which is very different from the determined efforts of a colt to dislodge its rider. When all these points are thoroughly accomplished in the breaking, it may be said to be terminated, and the training of the two-year-old commences; the only things yet to be learned are the use of the spur and whip, which should never be employed except as a punishment for faults committed; that is to say, they should never be used as an every-day practice, for, though every colt should be accustomed to them, it is very seldom that the opportunity is wanting of administering them for some fault or other.

A dose of physic will generally be necessary as soon as the breaking is over, and very often it may be required during its progress; but by the occasional use of a bran mash, and by giving a little green food with the hay, in most cases there will be no necessity for its employment while the breaking is going on, and while the quantity of corn is kept purposely below the usual amount. As soon, however, as the breaker thinks he dare do so, the corn is increased to the usual quantity, and then a dose of physic, preceded as usual by two bran mashes, will prevent that feverish condition which so often comes on after breaking, when the restraints of the stable are substituted for the freedom of the fields.

Breaking to Harness.

For double harness work, a double-break and break horse only are required to effect this object, and a very short time will generally suffice to make a young horse manageable, if driven with a steady companion, and by a careful pair of hands. It is some time before he would be fit for a timid lady, but for country work with those who are not alarmed by an occasional slight freak, after a week or ten days a horse may safely be used. The first thing to be done is to put the harness on, and allow it to remain for an hour or two during the two or three days before the horse is driven. Previously to this, he should be thoroughly broken to the saddle, because he will not otherwise know the use of the bit, and without that he will be entirely unmanageable. It was formerly a very common practice to break carriage horses at plough, by putting them in the middle of a team, and letting them jump and kick till they were tired; but this is a bad plan, and many horses have been spoiled both in limb and temper by it. Curbs and spavins are very commonly caused by the struggles of a high-couraged horse; and jibbing will often ensue as a consequence in a bad-tempered or sluggish one. The hot blood derived from the Eastern horse leads these colts to plunge and fight against restraint, in a very different way from the dull and phlegmatic cart horse; and, therefore, the plan is now discarded in favour of the break, where the colt has the power of moving forward, to some extent, in all his plunges, if any, and his blood is not unnecessarily roused by resistance. After he has been made accustomed to the harness, he is put in with the break horse, an animal of great size, power, and steadiness. The break horse should first be put-to, and the break brought out into a tolerably open place, where it may start on level ground, or with a very slight ascent. The break is built very strongly, and should have the space between the drawing-bar and the front axletree made up with iron rods, so that if a horse kicks over the bar, his legs do not fall, but he draws them back again at once. The bar should be padded,

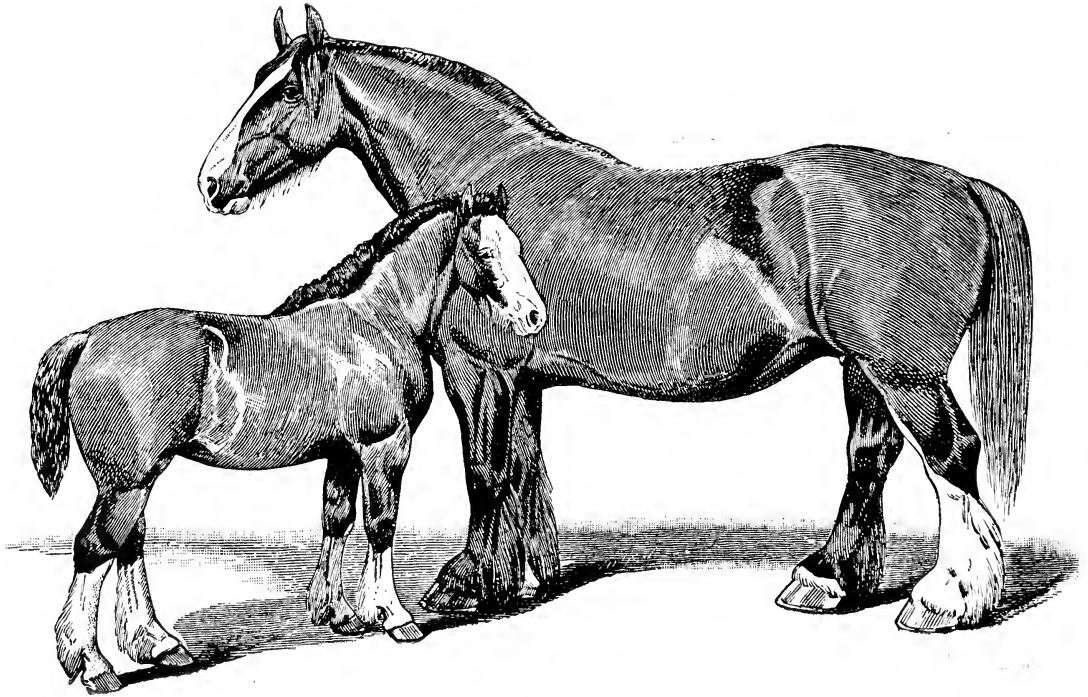
to prevent him damaging himself in his violence, if he plunges and kicks as some will do. The colt should have a well-fitting collar on, and it should be previously well oiled, to prevent its fretting the skin; he should also have a common rope halter on, with the end tied loosely to his hame terret, so that the breaksman can lay hold of it, and draw him towards him, without touching his mouth. When all is ready, and the two horses are put together, with the driver on the box, the break horse is gently touched with the whip, and takes the break off very quietly, the breaksman walking by the side, and encouraging the colt. Generally speaking, he walks off as quietly as possible, or he may make a bounce or two, but at first he does not seem to recognize his fetters; after a while, however, he will often plunge more or less, and, perhaps, if viciously inclined, begin to kick. The break should be steadily driven off, and kept going for an hour or rather more, but not much longer, as the shoulders are very apt to be galled by a persistence beyond that time. This lesson is repeated every day, until the horse learns to turn and hold back; and it is astonishing how soon a good-tempered horse takes to his new work. Knee-caps should in all cases be put on, to prevent blemishes, in case of any accidents.

For single work, every horse should first be put in double harness, and driven at least five or six times. It is not generally at first that vice shows itself, and frequently not until the fourth or fifth lesson, when the driver begins to try what the colt is made of by giving him a short gallop, with a stroke or two of the whip. And until this has been done no one can foretell what the colt will do under provocation, which is sure to come some time or other. When, however, this has been tried, and the colt will turn to either side, stop, and back, as well as throw himself into his breechen in going down-hill, he may safely be put into single harness, though at the same time with great care. Some horses are at all times quiet in double harness, and yet will never go in single harness, of which I have had several specimens. I once had a most inveterate kicker in single harness, which would go as quietly

as possible in double ; and I have had several bad jibbers which never showed that tendency for some time after breaking. When the horse is first put in single harness, it should be in a break expressly made with strong and stout shafts, and high enough to prevent his kicking over ; though some horses are able to kick over anything, and no kicking-strap will hold them down. A safety-rein should be added, buckled on to the lower bar of the bit, and passed through a ring on the tug and by the side of the dashboard up to the hand, where it may be held ready for use in case of the horse attempting to bolt. For ordinary use the rein should be put to the cheek, so as to be as little irksome to the horse as possible, and no bearing-rein should on any account be used. With these precautions, and with the aid of a breaksman and a liberal quantity of patience, most horses may be broken-in. When there is a great resistance to the breaking to single harness, or a tendency to jib or run away, a stout shaft may be furnished with a projecting bar of iron, and an outrigger applied to the splinter-bar, by which a second bar is fixed ; and then a break horse may be attached outside the shafts, and thus the colt is then compelled to go on or stop by the power of the steady and trained horse. In this mode the reins are applied as for pair-horse driving, and it is a very excellent way of breaking unruly horses ; indeed, I have known it succeed when all other means had failed in an obstinate kicker ; but only, however, for a time, as the vice showed itself nearly as bad as ever after a time.

Breaking and Teaching a Hunter.

Breaking is of course required for those colts which are specially intended for hunters, but, except in teaching to jump, it does not differ from the plan adopted in ordinary colt-breaking. The same mouthing-bit which I have already recommended will also suit this kind of horse, but its reins should be buckled considerably tighter, and the horse "put upon it" for an hour a day until he bends himself well. He may also have what is called a "dumb



SHIRE MARE, "STENSON BRISK" (7113) and Foal. First Prize at Buxton for Brood Mares, 1891.
The Property of Mr. F. CRISP, New Southgate.

jockey" buckled on his roller, with springs contained within its arms, by which the bit is allowed to give and take with the horse's action; but still always having a tendency to bend the neck and bring the horse back on its haunches. Unless this is effectually done, and the colt is made to use his hind legs by bringing them well under him, thus carrying a good part of his weight, he is never safe across ridge-and-furrow, nor in awkward places, where he is obliged to creep up close to the take-off, and gather all his legs together before making his spring. When the horse is being lunged he may be made to jump a bar, but not too often over a moveable one, or he finds out its tendency to fall, and becomes careless. A fixed bar should be used as soon as the horse understands this part of his business, and he will not hurt himself if he falls over it a few times, because there is nothing to hold his legs, and consequently he either falls forward or backward without injury. The bar should have side-guides, so that in lunging, the horse must go over or come back and face the whip of the groom following him; and when they are properly managed, the leading-rein slides over them without catching, and the bar may be taken by the horse in each round of the lunge. Some horses seem to enjoy the fun when they are clever and good-tempered, but not more than six or eight jumps should be given in any one lesson, for fear of disgusting the pupil. When he is perfect over the bar with the lunging-rein, and *after he is broken to all his paces*, he may be ridden over it, or any small fences, in cool blood; but he never ought to be put at this kind of work till he is perfect at all his other lessons. For if he does not know what the spur or the pull of the rein means, it is useless to confuse him by trying to make him do what he does not understand. No large jump should ever be tried without hounds, and when the colt is willing to go when he is wanted over small places, it is better to defer the conclusion of his jumping education until he can be taken out with hounds.

With hounds the colt is inclined to follow the field of horses, and will soon attempt any place his breaker puts him at; though often making mistakes, and sometimes carrying

the fence with him into the next field. Good hands, a firm seat, and an unruffled temper soon make him know his powers; and in a few times he learns to avoid mishaps and keeps his legs without difficulty. The breaking-bit already described is the best to ride young horses with, as it is large and allows of considerable pressure without injury; so that if the breaker is obliged to keep the head straight with some force, the colt is not thereby dragged into the fence, as would be the case with a small and sharp snaffle or with the curb. The same caution must now be exercised as before with regard to a too long continuance of the early lessons.

Breaking a Lady's Horse.

In breaking the lady's horse, if he is of good temper and fine mouth, little need be done but to make him canter easily, and with the right leg foremost. This is necessary, because the other leg is uncomfortable to the rider, from her side position on the saddle; the breaker, therefore, should adopt the means already described, and persevere until the horse is quite accustomed to the pace, and habitually starts off with the right leg. He should also bend him thoroughly, so as to make him canter well on his hind legs, and not with the disunited action which one so often sees. The curb must be used for this purpose, without bearing too strongly upon it; the horse must be brought to his paces by fine handling rather than by force, and by occasional pressure, which he will yield to and play with if allowed, rather than by a dead pull. In this way, by taking advantage of every inch yielded, and yet not going too far, the head is gradually brought in, and the hind legs as gradually are thrust forward, so as instinctively to steady the mouth, and prevent the pressure which is feared. When this "setting on the haunches" is accomplished, a horse-cloth may be strapped on the near side of the saddle, to accustom him to the flapping of the habit; but I have always found, in an ordinarily good-tempered horse, that if the paces and mouth were all perfect, the habit is sure to be borne. It is a kind of

excuse which gentlemen are too apt to make, that their horses have never carried a lady; but if they will carry a gentleman quietly, they will always carry a lady in the same style, though that may not perhaps be suitable to her seat or hands.

CHAPTER IX.

FARM HORSES.

Different breeds—Fairs for purchasing them—Farm stable—Portable stables—Stable management—Dietaries and cost of keeping in spring, summer, autumn, and winter—Useful rules—Soiling Horses—Pulped food.

THE farm horse exhibits several distinct breeds, originating in the various districts of the country when there was less intercommunication than there is at present, and when peculiarities of the locality, therefore, exerted undivided influence for generation after generation on the animals bred in it, so that they ultimately acquired a distinctive character.

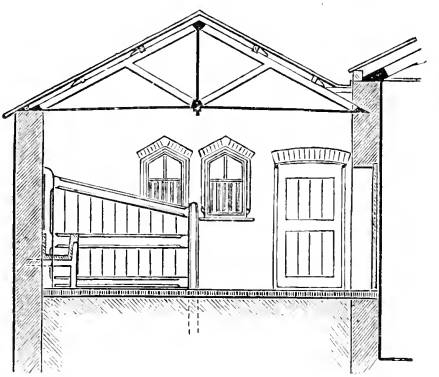
1. The **Black Dray Horse** of England is proper to the rich pastures of the central and eastern counties. He is a heavy animal, and thus of inferior value for the farm, but especially adapted by his weight and strength for heavy draught and road use.

2. The **Clydesdale** is one of our best farm horses—of a grey, brown, or black colour, combining strength with activity in the most generally useful proportion for field work; of generally a good temper; of good, rather large, size. He is the model of a well-made horse for agricultural purposes.

3. The **Suffolk Punch**, smaller than the Clydesdale, of a rounder and more compact form; of smaller bone; generally of a chestnut colour; of steady and resolute temper; he is the best possible combination of strength, activity, and quality generally as an agricultural horse for light land districts.

4. The **Cleveland**, a breed originating in Yorkshire, is now a carriage horse rather than a farm horse. Tall, of a bay colour, not of so heavy or compact a build as the other breeds named, this breed now furnishes horses for the carriage and for the hunting field rather than for the farm. We add in a foot-note a memorandum of the fairs where these breeds are to be seen.*

Stable for Farm Horses.



This cut represents a section of farm stabling. It is a good illustration of economical and sufficient housing for

* The best show of *Clydesdales* is to be seen at Allhallow Fair, Edinburgh, in November; Rutherglen, Glasgow, May and November; Dumfries, January and February, &c.; and Ayr in July and October.

Clevelands are met with at Newcast'e-on-Tyne in March, August, October, and November; Stagshawbank, May; Durham, March, May, and September; Yarm, October; Howden, September; Northallerton, February; Brough Hill, September or October.

Suffolk horses may be seen at the fairs in the county, as well as at those in the principal fairs in Essex.

The large *Black Dray* horse is exhibited at Northampton, August; Aylesbury, Palm Saturday; Wisbech, May: Boston, November; and Horncastle, August.

The *Shetland*, as well as the *Iceland* pony, are shown in droves at the fairs in the north of England, notably Newcastle-on-Tyne

the horses of the farm. Six-feet stalls, with ample gangway behind them, are provided with manger and rack; water is at hand in two or three troughs, at which the horses drink when coming in from work. Ventilation is provided in the simplest way, by an occasional ridge-tile being lifted out of the regular course, and bedded at either end upon its neighbours—the under boarding being there left open. And light is provided from the roof by skylights, and by hanging lamps at night.

But for farm work portable stables have often been advocated. Considerations in their favour are thus urged by Mr. Baugh Almack in a letter to the Agricultural Society:—

"If horses had portable stables close by their work, they would lose less time in going to and from it, and thus be able to do more work in the same time. They could be comfortable in the stable close by when not wanted on the land, and they could be making the best manure by eating lucerne, tares, or whatever else was most likely to be profitable to grow close by, and the manure so made would be close by where it was wanted.

"I have no doubt it is quite practicable to make every necessary farm building moveable; and in many cases I am quite certain that it would pay well to make part of them portable, now that there is a probability of an increasing scarcity of farm labourers."

On the possibility of such portable buildings it is sufficient to say that they ought to be made so by the easy fitting and portability of their several parts, not by the

and Durham; the *Welsh* pony in those of Wales, chiefly Llanrhaiadr yn Mochnant, Denbighshire, in July.

The largest fairs for horses in the kingdom are Horncastle, in August; Howden, September; Newcastle-on-Tyne, August and October; Rugely, Staffordshire, June; Brough Hill, Westmoreland, September; Pershore, June, &c.

NOTE.—For the dates of the above, see current Farmers' Almanacs. The "Live Stock Journal Almanack" contains full information, arranged under the respective counties. In many instances the dates are variable, being regulated by some local event, feast-day, &c. On this account it is considered best to omit figures entirely.

whole being capable of being moved bodily on wheels. Any quantity of ground may be covered by a roof supported on wooden walls, in building which a certain number of grooved posts are used—receiving planks and carrying rafters and sheets of corrugated iron roofing—every part of each section being exactly like another, so that the whole can be taken down and unpacked, and carried away and replaced, without the drawing of a nail and with no need of any particular skill.

Stable Management.

Having got the young horse so far advanced as to be able to stand full work, it is the object of the farmer to feed him economically and to the best advantage. The provender should be the best the farm produces, for this is ultimately the cheapest; and as great a variety of provender should be given mixed together as is compatible with economy, and the quantity of each kind should be regulated according to the amount of nitrogenous matter contained in each. Vetches (seed) and beans contain nitrogenous compounds in largest quantities; but when horses are feed upon either of these kinds of provender alone, the health soon fails, owing to the beans being too heating and binding; tares are too bitter as well as binding; but were the heating and binding beans and vetches mixed with cool and relaxing bran, which contains much less nitrogen, we should have the cheapest and most nutritious food which can be given to animals, and as wholesome food as it is cheap and nutritious. It is, however, absolutely necessary that the beans should be roughly ground; bruising only is not sufficient for easy digestion, nor do horses, as a rule, eat them so well. But horses must have some more bulky food than beans and bran; for however nutritious the diet, there must be bulk also. If hay is not used, some other kind of provender equally bulky must be substituted. In the horse the large intestines, as well as the stomach, suffer from long abstinence of food, and no class of horses are more subject to long fasting than farmers' horses. The smallness of the sto-

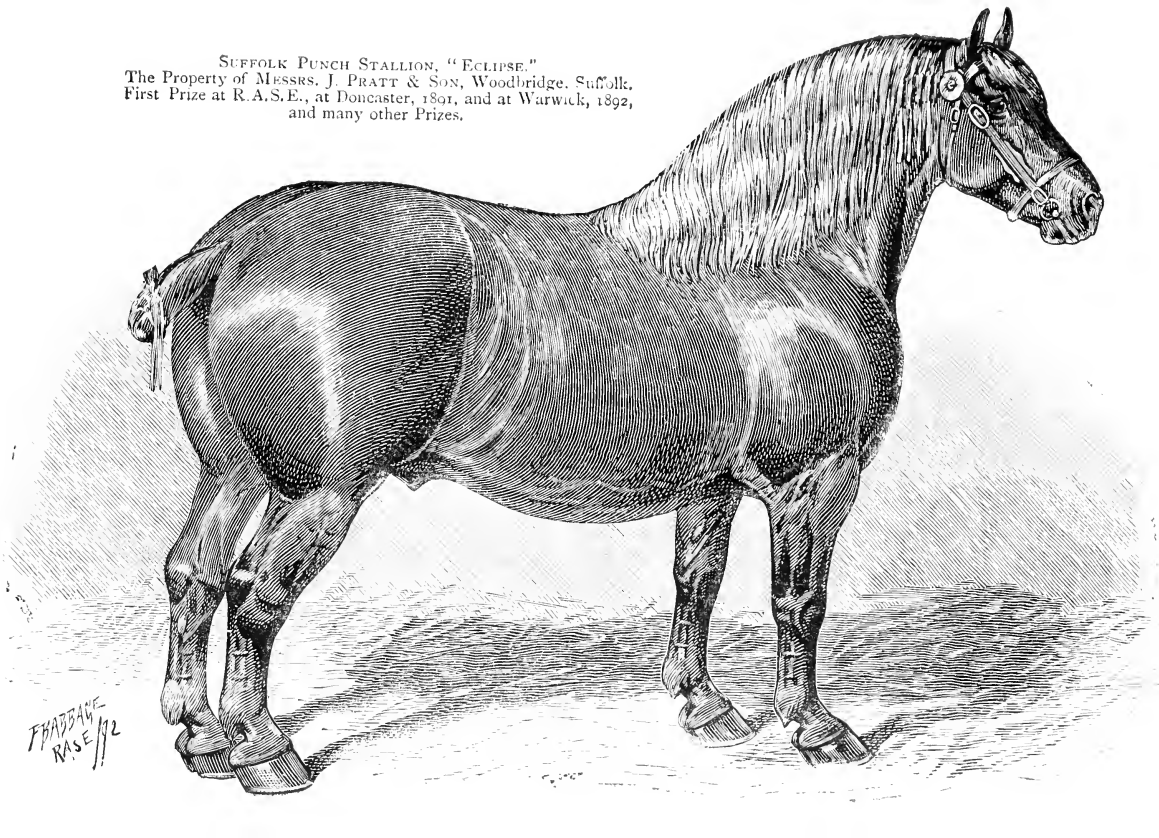
mach shows that the horse should never go more than a few hours without food, yet we frequently see farmers' horses work six or eight hours without a break. The stomach becomes nearly empty, the intestines more or less filled with gas; the animal, notwithstanding this, is frequently allowed to take water and food *ad libitum*, as soon as they reach the stable, which they do voraciously, the result being an attack of gripes or staggers. During the spring months, when the horses are at full or extra work, they generally receive three bushels of oats per week, with hay, but during the winter the amount of oats is somewhat reduced, on account of receiving cooked food once a day when on straw. The oats, for the most part, are given whole. For some time I have witnessed the crushing of oats with success, particularly in the feeding of old horses. The system of manger feeding has become very general amongst colliery, contractors,' and carters' horses, and the expense of feeding is thus diminished very considerably. I think were farmers aware of the saving thus effected, this system would become almost universal. The chaff for manger feeding may be composed of two trusses of clover or meadow hay to one of wheat or oat straw, cut into pieces of a quarter or half an inch in length, mingled well together, the allowance of crushed oats and roughly-ground beans afterwards added, and mixed with the chaff. For the agricultural and cart horse, 8 lbs. of oats and 2 lbs. of beans should be added to every 20 lbs. of chaff, and 36 lbs. of this mixture will be sufficient for any moderate-sized horse, with general or even hard work. Dray or waggon horses may require 40 lbs., yet it is difficult to lay down any given quantity, as the appetite of the horse varies so much; it will be best regulated by his attendant. The times of feeding should be equally divided as convenience will permit, and when it is likely the horse will be kept much longer than usual from home, the nose-bag should invariably be taken, as his small stomach is emptied in a few hours. When the chaff is thus mixed with the oats and beans, the horse is compelled to chew his food—he cannot bolt the hay and straw; and while he is forced to grind that down, the oats

and beans are properly ground with it, yielding more nourishment. The advantage derived from using a certain portion of straw cut up with the hay is very great, especially in farm establishments.

Good hay, perhaps, stands first in importance on the list of horse food. Great care ought to be used during hay harvest to get hay as full of the herb and flower as possible; inferior hay produces colic and irritable coughs, both of which I have seen gradually disappear by withholding the moulded hay on which the horses were feeding. The same remarks apply strictly to oats of inferior quality, with this exception, that bad oats appear to become a powerful diuretic, acting upon the kidneys, producing an immense increase in their secretions, the effects of which are rapid loss of condition, with great debility. It may not be out of place to notice the practice of wheat feeding, particularly when inferior wheat has been so plentiful.

What we have to say of inferior wheat also strongly applies to inferior barley, and all other kinds of inferior grain and cereals. It is a mistake to suppose that any method of cooking or mixing will render these more digestible or nutritious. They are inferior in point of nutrition, and should not be used for the support of working horses. An idea also prevails that good wheat and barley are very difficult of digestion, and liable to produce serious obstructions. This usually happens when horses help themselves from the barn floor, and the safe precaution against the evil is to keep the doors safely closed. When wheat or barley is supplied as daily food, proper quantities should be given, and these always mixed with a due proportion of bran and sound chaff.

In the present system of feeding, some farmers appear almost compelled to give their horses straw during winter, generally when the animals are off work; but as straw requires more exercise to produce digestion, it ought to be given (if at all, alone) when the animal is at work, as horses with voracious appetites and little work have time to eat a great deal more than the digestive organs can accommodate. It is an indisputable fact that there are more cases of colic during Sunday night and Monday



SUFFOLK PUNCH STALLION, "ECLIPSE."
The Property of MESSRS. J. PRATT & SON, Woodbridge, Suffolk.
First Prize at R.A.S.E., at Doncaster, 1891, and at Warwick, 1892,
and many other Prizes.

morning than during any other part of the week. If the plan of giving horses cooked food were more adopted when feeding upon straw, much of this disorganization might be prevented. In Edinburgh, where cooked food is much approved, the food is used well washed, generally being Swede turnips and potatoes, in equal proportion, then boiled and thrown into a large trough or cooler, and a little wheat chaff along with a handful of salt for each horse, well mixed together. The weight of the turnips and potatoes, which is 56 lbs. when put into the boiler, is reduced to about 40 lbs., one-half of which is given at dusk, or whenever the horse returns from work, and the remainder at eight o'clock, when the men clean and do them up for the night, with oat or wheat straw, upon which the owners place no value, considering it as equivalent to the manure from the horses.

The supply of water is a part of stable routine from which the horse not unfrequently suffers. Horses, in receiving water, should not be always restricted, yet they should not be allowed to drink as much as they like on returning home over-wrought, hot, and tired. A single quart or two before entering the stable will refresh and invigorate, and be productive of no harm. After being a little cooled, water should be liberally supplied to him. Grass or green herbage is given to most horses during the summer months; and before turning horses out to the field it is necessary to prepare them for the change, the too sudden transition from dry to green food, and *vice versâ*, having the effect of causing obstructions in the intestines. Grass should be given sparingly at first, so that the stomach and intestines may be prepared gradually for the reception of succulent herbage. Horses, when taken up from grass in the autumn, ought to be put into as cool a stable as possible, with a full allowance of water, their food consisting of oats, mingled with bran, with two bran mashes daily for the first week, and a little hay. On the following week more hay and oats may be given, and a bran mash withheld. It is necessary, in keeping horses healthy, to have stables well ventilated, clean, and thoroughly drained. We can scarcely have too much air

entering in at any period of the year, providing it does not blow directly upon the horses. The temperature of the stables should range from 40 deg. to 50 deg. in winter, and from 60 deg. to 70 deg. in summer. Every stable should be thoroughly drained, not into a neighbouring cesspool, but to such a distance as will preclude any effluvium escaping into the building. All dung and litter ought to be conveyed from the place twice a day.

We give in the following page an enumeration of various dietaries for farm horses. They describe the practice of different men in various parts of the country. In successive columns I have put, first, the number of the cases, second, the authority on which it is given, thirdly, the weight consumed per week of hay, oats, beans, roots, clover, and straw by a horse, and, lastly, the calculated weekly cost of maintaining it. It is to be understood that an *asterisk* (*) by any of the figures intimates that the grain was crushed, or the green food cut into chaff; and a *dagger* (†), that the roots were given boiled or steamed. It is a capital practice to cut rye, as soon as fit, into chaff along with hay or sweet straw, and mix the whole up with crushed oats and beans, giving the regular supplies in small quantity at a time, and thus gradually accustoming cattle to their change from dry winter food. Vetches cut when young should be allowed to wither before being used in the stable, otherwise they prove at first to be physic rather than food.

WEEKLY FOOD OF A FARM HORSE—SPRING AND SUMMER.

No.	Name and Address.	Hay.	Oats.	Beans.	Roots.	Sundries.	Pasture.	Weekly Cost.
	THE SPRING SEASON.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	*s.* *d.*
1	Professor Low—Elements of Agriculture	140	73	...	...	Potatoes, 70†	...	9 9
2	— Binnie, Seaton—Highland Soc. 1850.....	84	70	...	500†	Linseed, $3\frac{1}{2}$	ad lib.	9 9
3	J. Twynam, Botley Farmers' Club	112	84	16	...	...	...	10 3
4	R. Baker, Writtle, Essex	70	70	30	...	...	140	9 0
5	T. P. Dods, Hexham	ad lib.	120*	...	...	...	...	10 6?
6	— Baldwin, Glasnevin.....	147	98	...	Carrots, 49	...	...	11 6
7	C. Howard, Biddenham.....	ad lib. $\frac{1}{2}$*	42	...	...	Green Rye ad lib. $\frac{1}{2}$*	...	7 6?
8	A. S. Ruston, Isle of Ely	ad lib. $\frac{1}{2}$*	84	...	...	ad lib. $\frac{1}{2}$*	...	10 0?
9	A. Simpson, Beauly, N.B.....	168	70	14	...	...	168	10 0
	THE SUMMER SEASON.							
1	Professor Low—Elements of Agriculture	...	35	...	...	Cut Clover 1400	...	5 0
2	H. Stephens—Book of the Farm.....	...	...	...	...	ad lib.	Night.	8 2
3	J. Gibson, Woolmet—H. Soc. 1850.....	...	50	...	...	5*s.* 3*d.*	...	7 6?
4	— Binnie, Seton, ditto.....	...	70	28	...	ad lib.	Night.	9 0
5	— Thomson, Hangingside, ditto	...	84	...	...	ad lib.	...	11 0?
6	— Barthropp, London F. Club, 1853	...	...	48	...	3*s.*	...	9 6
7	J. Morton, Whitfield Farm, 1843.....	...	70	...	...	7 cwts.	...	6 9
8	W. C. Spooner, Journ. Ag. Soc., vol. ix. p. 274	...	42	...	...	5*s.*	...	8 9
9	T. Baldwin, Glasnevin	...	35	...	...	700	...	8 0
10	J. Coleman, Cirencester.....	...	42	...	...	ad lib.	...	6 0
11	J. Cobban, Whitfield	...	42*	...	...	ad lib.	Straw, ad lib. Night. Pasture.	6 9?
12	E. W. Moore, Coleshill	...	63	32	...	ad lib.	Night.	10 6?
13	S. Rich, Didmarton, Gloucestershire	84*	$31\frac{1}{2}$	...	...	...	2 acres.	7 6?

WEEKLY FOOD OF A FARM HORSE IN AUTUMN.

No.	Name and Address.	Hay.	Oats.	Beans.	Clover, &c.	Weekly Cost.
		lbs.	lbs.	lbs.		*s. d.*
1	W. Gater, Botley	168	63*	32*	...	12 0
2	W. C. Spooner	112	84	24	...	11 0
3	T. Aitken, Spalding	...	37½	...	ad lib.	7 6
		...	...	35	ad lib.	
4	T. P. Dods, Hexham	...	105	...	ad lib.	10 0?
		ad lib.	105	...	Straw.	10 6?
5	A. Ruston, Isle of Ely	ad lib. ½	84	10	ad lib. ½ Bran, ½ Bush.	9 0?
6	A. Simpson, Beauly	168	70	14	Straw, 24 lbs.	10 0
7	H. J. Wilson, Mansfield	...	52½	...	ad lib.	7 3?
		42	87½	...	ad lib.	9 0

In this Table * means that the grain is crushed.

THE WEEKLY FOOD OF A FARM HORSE IN WINTER.

No.	Name and Address.	Hay.	Oats.	Beans.	Roots.	Sundries.	Straw.	Weekly Cost.
		lbs.	lbs.	lbs.	Potatoes,	lbs.	lbs.	*s.* *d.*
1	Professor Low—Elements of Agriculture.	56*	56*	...	56†	...	56*	6 6
2	H. Stephens—Book of the Farm	112	35	...	Turnips, 112	...	...	6 0
3	J. Gibson, Woolmet—H. Soc. 1850	...	84	...	217†	Potatoes, 217†	112	9 0
4	— Binnie, Seaton	...	70*	28*	243†	Barley, 42†	ad lib.	11 6
5	— Thomson, Hangingside	...	84	14	336	14	ad lib.	9 6
6	W. C. Spooner, Ag. Soc. Journ., vol. ix.	...	63	...	42	...	196	4 9
7	T. Aitken, Spalding, Lincolnshire	ad lib. (⅔)	37	35	...	...	ad lib. (⅓)	9 0
8	G. W. Baker, Woburn, Bedfordshire	...	60*	20*	...	...	...	9 8
9	R. Baker, Writtle, Essex	70	42	...	...	...	140	5 0
10	J. Coleman, Cirencester	...	84	16	...	...	ad lib.	7 3
11	T. P. Dods, Hexham	...	95	...	56	...	ad lib.	8 0
12	J. Cobban, Whitfield	84*	60*	...	...	Linseed, 3½	ad lib.*	7 3
13	S. Druce, jun., Ensham	112	52	...	Swedes, 70	...	2 bush.*	7 0
14	C. Howard, Biddenham	ad lib. (⅔)	52	17	84	...	ad lib. ⅓*	8 6
15	I. J. Mechi, Tiptree	49*	70*	...	M. wurzel, 210	...	ad lib.*	7 6
16	W. J. Pope, Bridport	2*	84	...	...	...	ad lib.	9 0?
17	S. Rich, Didmarton, Gloucestershire	168	63	...	...	Grains, 2 bush.	ad lib.	10 8
18	H. E. Sadler, Lavant, Sussex	140	84	...	...	...	...	9 9
19	J. Morton, Whitfield Farm	...	126	...	Carrots, 350	...	ad lib.	10 9
20	E. H. Sandford, Dover	56	42	...	...	Bran, 12	ad lib.	5 6
21	A. Simpson, Beauly, N.B.	...	49	7	105	Tail Corn, 21	ad lib.*	5 6
22	H. J. Wilson, Mansfield	42	52½	...	...	Bran, 21	ad lib.	6 6?
23	F. Sowerby, Aylesby, N. Lincolnshire	112	28	Cut Oat Sheaf.		...	ad lib.*	8 0?

One of the most useful general rules that can be observed by an arable farmer is, to keep his horses always at work. The expense of a team is so great, that if he does not pursue this rule, he must lose by them. January is a month in which all business of tillage ought to be at a stop. If the weather be a hard frost, care should be taken to make use of it in carting manures on the farm. If there are composts ready, a frost should not be let slip; or, if there be faggot carting to be performed, or the earth of borders under hedges to be carried, the carts should be kept close to work of that kind as long as the frost lasts. But in open weather, road-work must be done. Carting out the corn may not nearly employ the teams; on other days the carts should go to the nearest town for manure. There certainly are situations precluded from this advantage, but not many.

Soiling.

This practice is usual on most arable farms, especially where provision is made of crops near the feeding-boxes and yards for carrying it out, a profitable method of increasing the store of manure upon the farm. Where Italian rye-grass and lucerne and clover, liberally treated, are near the feeding-house, horses can be kept during the summer months more cheaply than during winter, with at least as great advantage to the fertility of the farm.

Enlightened farmers have in many districts adopted this system for horses. Every one knows how tormenting flies are to animals when abroad: ride into a field in summer to look at stock, and where do you find them? Not feeding, but standing or resting under trees, in ponds, in rivers, and if there is no better shelter, in ditches under brambles; in a word, anywhere but feeding in the open air. What they graze is in the morning and evening; and in many cases they lose in the heat of the day all they gain at those moments of their comfort. To this superiority we must add that of the main object, which is the dunghill: in one case this is accumulated in a degree even superior to what is effected in winter; in the other,

it is scattered about the pastures, and nine-tenths of it carried away by the flies, or dried almost to a *caput mortuum* by the sun. The prodigious superiority of thus raising a large and very valuable dunghill in one case, and none at all in the other, ought to convince any reasonable man that there is not a practice in husbandry so decidedly superior as this of soiling, were there not one other reason for it than what have already been produced.

Those farmers who have given particular attention to the state of farmyard manure, as it is made in winter and in summer, and to the efficacy of both, can scarcely have failed to remark that the superiority of the dung arising from any sort of stock in summer is very great to such as is made in winter from stock no better fed.

There is, however, another fact of equal importance, that the food given in stalls or boxes goes so much farther than it will do when grazed where it grows; and when we recollect the old remark, that a beast feeds (or consumes) with five mouths, we shall not be surprised at this fact. A greater stock may thus be supported by the same farm, in one system, than there can be in the other.

Two circumstances demand attention, which, if neglected, will considerably lessen the benefit to be derived from soiling. The one is, to have a plentiful provision of litter; and the other, much care in feeding—to give the beasts but little at a time: if much be tumbled before them, it heats, they pick it over, and the waste may be great; and if a cart be left in the yard loaded, the contents heat, and then the animals will not eat it. A certain degree of care is necessary in everything, and in nothing more than in feeding. As to litter, it is an object of such importance, that provision for the system should be gradually made through the winter, if corn enough be not left for summer threshing to supply the beasts. All dry vegetable matter, capable of providing a dry lair in stalls or boxes; leaves, in woodland countries; fern, dried peat, &c., should be thus collected against the summer months. An enterprising, vigilant farmer, when he has such an object as this in view, will exert every nerve to be prepared for a

system the profit of which will depend so much on the care previously taken to be well provided with litter of some sort or other.

The first crops that will be ready for soiling are the rye, lucerne, and the Italian rye-grass, and the *trifolium incarnatum;* which may be supposed to last all the stock till the first-sown winter tares are ready, when the lucerne left uncut should be mown for hay. The second-sown winter tares come next; then clover, to be succeeded by the third sowing of tares, and by the second growth of Italian rye-grass and of lucerne. After this come spring tares and the second growth of clover; and the third cutting of Italian rye-grass and of lucerne may follow. If chicory be applied to this use, for which it is well adapted, it will, on any good land, be mown thrice, and on very good soils four times. The quantity and value of the manure thus made will surprise those who have not witnessed it. If horses are fed carefully, have water at command, and are kept clean, they will thrive to the farmer's satisfaction.

How fully all this is consistent with practice and experience, may be gathered from the following report of a week in June upon a farm in Buckinghamshire:—"Our horses are now living on tares, with half a bushel of beans and a bushel of rice meal each per week."

Horses do well on cut green food during June, giving them, in the first place, hay cut into chaff along with it, and the full allowance of corn so long as the labour of turnip culture remains to be done. In the more leisure month of July they may do on cut clover and without corn.

Soiling horses are rarely overworked during July, and they receive in general nothing but cut green food and pasturage.

All this month the teams should be soiled daily with lucerne, vetches, or clover, in the house or yards; and if in the latter, they must have water always at command, and also sheds for shelter; and if the farmer does not provide plenty of litter for treading into dung, he neglects a great part of his profit. Lucerne is the best plant for

this purpose, and an acre of it will go much farther than of anything else. Clover and tares mown every day will answer well in the same use. In want of these, give natural grass; but any of them are better, with plenty of litter for dung, than turning the horses or oxen into the field. Where the teams are well done, they get, in addition to this green food, about a bushel of oats each weekly, mixed with chaff for their nose-bags.

The following is the report of a Hampshire farmer in July:—"Our summer vetches being now in excellent condition for soiling, we give them to the horses; our horses always receive their green food in the stables, as we are greatly opposed to the practice of turning them out either in the fields or in open yards; we find that working farm horses, from being turned out, are subject to more accidents, and also casualties, in regard to their health and well-doing, besides the great loss of manure consequent upon being out of the stable."

Beasts that are soiled in stalls or yards have, through all this season, plenty of food, supposing a proper succession of those crops which have been mentioned for this use.

Pulped Food.

On feeding horses with pulped roots, Mr. Slater, of Weston Colville, Cambridgeshire, says:—

"I give all my cart horses a bushel per day of pulped mangold, mixed with straw and corn chaff. I begin in September, and continue using them all winter and until late in the summer—nearly, if not quite, all the year round; beginning, however, with smaller quantities, about a peck, and then half a bushel, the first week or two, as too many of the young growing mangold would not suit the stock. I believe pulped mangolds, with chaff, are the best, cheapest, and most healthy food horses can eat. I always find my horses miss them when I have none, late in the summer. I give them fresh ground every day. Young store beasts, colts, &c., do well with them; but I do not think they could be used with any advantage with a flock of sheep; they are, however, useful for fattening

bullocks, inducing them to eat any food you may wish to give them."

Whenever the root crop is inferior, or the hay crop badly harvested, the pulper, for economizing the former, and for enabling the easy consumption of the latter, is a great economy. It is the most recent experience that roots should be pulped and mixed with chaff a day or so before being used.

Whether or not the advantage of pulping is derived from its inducing a larger consumption of straw, first cut and mixed with the pulp, than when offered to animals uncut, it is decidedly an advantage to the arable farmer, for a large quantity of straw is on plough-land generally used wastefully in litter, and a portion of it will be saved for use as food with economy and profit.

The advantages of pulping roots are—

1. Economy of food, for the whole is consumed without waste, the animals not being able to separate the chaff from the pulped roots, as is the case when the roots are merely sliced by the cutter; neither do they waste the fodder, as when given without being cut.

2. The use of ordinary hay and straw. — After being mixed with the pulp about twelve hours, fermentation commences; this soon renders the most mouldy hay palatable, and animals eat with avidity that which they would otherwise reject. This fermentation softens the straw, makes it more palatable, and puts it in a state to assimilate more readily with the other food. In this respect the pulper is of great value.

3. Steaming food is another great economy. A warm meal of steamed roots, with hay-chaff and oats, or barley, may take the place of one of the feeds of oats once a day in autumn, when labour is heavy and the weather is becoming severe.

CHAPTER X.

DISEASES OF THE HORSE.

General observations — Disease — Definitions — Pathology — Fever: simple symptomatic, and specific—Inflammation—Abscess—Serous Cyst—Classification of Disease—Prevention of Disease—Sending for the Veterinary Surgeon.

THE well being of mankind is acknowledged to be largely dependent upon the health and soundness of constitution of our domestic animals. As the flesh of cattle, sheep, and swine, forms the great proportion of human food, it is obvious that only those animals known to be in perfect health should be slaughtered for that purpose. But all our domestic animals exert an influence more or less detrimental to the public health, altogether apart from the consumption of their flesh as food. This division of the subject claims our attention at the present time, as equine animals, especially, are liable to contract diseases which are not only transmissible to mankind, but certain forms of which prove malignant and speedily fatal. In order, therefore, to secure the safety of the human population, it is imperative that the creatures under constant use should possess a uniform standard of health.

The value of sound constitution, as creating and maintaining an aptitude for meeting the daily requirements of toil, or work, in its various degrees of intensity and continuance, is so apparent that we need not discuss the subject here.*

The horse, possessing remarkable qualifications for service under man, naturally engrosses much attention. He also ranks high in commercial value, and on that account alone stimulates interest in his preservation. There is a nobility in his character, combined with a

* This is amply treated by the Author in his little manual, "How to Feed the Horse." London and New York: F. Warne & Co. Price One Shilling.

keen sense of perception, which secures for him an intimacy and friendship with mankind scarcely enjoyed by any other creature. The intelligence of both by simple intuition is creative of an adaptability which secures the happiest results: the higher coming down, the lower rising—thus meeting and blending in mutual concord, confidence, and understanding, which, earnestly studied, are unique.

It is not surprising that we should attach an important value to our friend and companion—the horse. We acquire such knowledge of his powers and the signs of unquestionable health, that it is no longer possible that we should neglect anything which shows a falling off in that particular. Our interests are intimately bound with his, and we leave no stone unturned in order to sympathise with him, comprehend his malady, and relieve his suffering. There is not another animal, saving in some respects the dog, which. under disease, so seconds our endeavours, and appreciates by a wonderfully acute intelligence any efforts to alleviate his agony. He is but little removed from ourselves, and his muteness proves no barrier between us. On the contrary, day by day we know each other better, and the love is so deep, on his part at least, that the trust is never broken, and faithfulness characterises him to the end. Would that human friendship could always boast of that standard to the saving of crushed hopes and endless despair.

The knowledge acquired by daily contact with animals is first evident in the judgment we are able to form as to the state of health, and subsequently in our ability to recognise departures from that standard. Having learned to estimate the signs of health, the faculty of discovering those of disturbance becomes equally as acute. This study is often acquired by men of no scientific pretensions, and proves to be of great value; but to the veterinary practitioner it is of immense importance, especially when it is exercised upon the suffering animal. Few men, however learned in the general habits of the horse, can convey in description even a tithe of the information which a practised veterinarian may gather at the side of

his patient. As the state of health is betokened by infallible signs, so the existence of disease is no less certain as shown by perverted function and states which are never present in health. The department of science which comprehends these particulars is known as *Pathology*, or the doctrine of disease. In order, however, to ascertain what particular form of disease is present, the practitioner resorts to a process of analysis. He examines the signs singly and combined, and often turns to a form of negative examination, that is, testing certain organs to prove their state of health. This is particularly called for in some obscure forms of derangement. *Symptomatology* is the term by which the signs of a malady are known as they appear in acknowledged or consecutive order, when they are said to be characteristic of the disease during life.

The value of such study is remarkably apparent in the results of an examination of the body after death. Disease works important changes in structure as well as function of organs, and these are minutely compared with the appearances common to the healthy body, a proceeding which forms an important part of the curriculum throughout the period of training at our veterinary colleges. While *Anatomy* teaches the relative position, form, and general appearances of all parts of the healthy body, *Morbid* or *Pathological Anatomy* is the symptomatology of disease after death.

By *Veterinary Medicine* we understand the enumeration and consideration in detail of the nature, causes, symptoms, and morbid appearances of all diseases. *Veterinary Surgery* is the term applied to such diseases as call for operations, generally the result of accident, as fractures, ruptures, punctures from pointed instruments, lacerations, &c., &c.

Materia-Medica is that department which describes the various remedies, their nature, physical characters, and actions upon the animal body; also the uses, doses, and forms of combination in which they are prescribed. It further teaches how certain medicines act upon and destroy each other; and more than this, how two or

three, when administered by persons ignorant of their nature, may form a poisonous mixture which kills the patient, the secret coming to light on a careful *post mortem* examination. The list of remedies is a long one; many are of special character, and appropriate only in particular cases, and for separate animals. From these circumstances the practice of veterinary medicine calls for a great amount of skill, accurate observation, and sound judgment. The patient is speechless, but he appeals by a power which speaks loudly through important signs. A study of his ailments and their treatment by remedies, medical and surgical, is, therefore, not a simple matter. Attempts have been made to prove the opposite, with the result, irreparable injustice and cruelty to the animal, and prostitution of a science to a grade below the meanest degree of mechanical skill. Rightly estimated it may engage the attention of men of science and high social position, and secure the commendation of observant and thinking professors in other schools of thought. Viewed as an occupation for which grooms, coachmen, carters, shepherds, and cowherds only are eligible, it must degenerate to empty quackery, the end of its utility and application having arrived.

PATHOLOGY OR THE CONDITIONS OF DISEASE.

Subsequent chapters will be devoted to an enumeration of the various ailments of the horse, and a consideration of the signs or symptoms by which an ailment or disease is recognised. During late years much valuable information has been acquired by means of close investigation. The category, by no means a meagre one, has been augmented. Clearer views are now held on subjects hitherto regarded as undetermined or doubtful, and the general method of dealing with disease is thus far satisfactorily, but not finally, improved.

The plan of grouping diseases will not have much interest for the general reader, and we may dismiss the subject with the declaration that the pathologist, feeling himself immensely at home in it, renders invaluable aid by indicating the outline of methods by which the malady

may be judiciously treated by the numerous remedies of a medical or surgical character. As a preliminary to the general context on general diseases we append, as follow, some remarks on *Fever, Inflammation,* &c.

Fever.

By this term we understand a disturbed condition of the system, characterised by perverted or arrested function, more or less general. The various secretions are diminished or altogether withheld. The nervous system indicates an increased sensibility or unusual excitement; and, by the influence exerted upon the organs of respiration, reproduction, and notably those engaged in nutrition and depuration, all are, more or less, involved, or their functions suspended. The system is thus bordering upon a state of more serious derangement, and if allowed to proceed, a condition of confirmed disease is established.

Three kinds of Fever are recognised, viz., *Simple* or *Ephemeral, Symptomatic* or *Sympathetic,* and *Specific.*

Simple Fever is defined to be that short-lived or ephemeral state of disturbance often noticed in highly-fed animals, occupying close stables, and breathing a warm, but not necessarily tainted, atmosphere. It may arise from the irritation caused by badly-fitting harness, or the discomforts of a short journey under the hands of a rough or otherwise injudicious driver. Colts under breaking often exhibit this form of simple disturbance. A slight increase of circulation, respiration, and animal temperature will be observed, with a hot dry mouth, diminished secretions, slight constipation, &c. In a short time, varying from one to several hours, after a draught of water, a bran mash, or moderate meal of green food, roots, &c., the symptoms have disappeared, and the animal is apparently none the worse. We cannot, however, limit the understanding to the only conclusion that this state of so-called simple or ephemeral fever is not without significance. Diligent inquiry should be instituted with the view of correcting existing abuses, and

preventing as well as dissipating them by means of proper exercise, airy dwellings, and suitable food, one or all of which may be at fault. Neglect of this is the precursor of greater evils which we now proceed to notice.

Sympathetic or Symptomatic Fever may be regarded as an intense or violent aggravation of the preceding form. The following simple illustrations will render this quite clear. Minor causes of irritation, accidents, &c., as simple scratches, friction to the skin, bruises, a slight chill, &c., may induce nothing more than simple fever; but the effects of a nail driven into the sensitive part of the foot, a muscular part, or penetrating the walls of the chest or abdomen, the bruising of the coronet or circumference at the top of the hoof, severe laceration of the skin or muscles, fracture of a bone, acute inflammation of an important organ, &c., &c., will produce a vast amount of disturbance, and even endanger or destroy the animal's life. In such fatal states the immediate cause of death is not the puncture, the bruise, or laceration, &c., severe as they may be, but the sympathetic fever, which is spoken of as *constitutional disturbance*, vital organs being brought into sympathetic suffering with parts originally injured. Such manifestations being common or always attendant upon extensive and serious lesions, excluding, however, their specific signs, are said to be symptomatic, that is *indicative of the severity and seriousness of the original malady.*

Symptomatic fever arises through the medium of the nervous system; which brings all parts of the system into union and sympathy. It is nature's telegraphy, by which the disease of outlying members is made known in the central system, and that the signs thus registered are of serious and urgent import, admitting of no delay, and calling for the exercise of prompt, sound judgment. The respiration is accelerated, gradually, sometimes rapidly assuming the form termed *blowing*, such as is seen in the distress arising from long and painfully severe exercise; the pulse is *full* and *bounding;* the arrest of secretion, a common result of perverted function, has diminished the quantity of urine, which has a *strong odour* and *deep*

colour; the bowels, restrained by the same cause, are slow to act, and the evacuations are *small*, *hard*, *dry*, and *glazed with mucus*. The mouth is *dry* and *hot*, and the tongue covered with a *thick slimy secretion*, and the internal part of the rectum, or posterior gut, partakes of the same characters. The ears, skin, and legs are also hot, and often the sufferer breaks out in violent perspiration which may somewhat relieve the state of the internal organs. From this stage the disease, if unrelieved, assumes more serious characters. The coat becomes harsh, lining mucous membranes are reddened, and the countenance exhibits an expression of anxiety as pain increases; and external parts, removed far from the centre of circulation, fail to maintain a normal temperature: it may vary from abnormal heat to surprising cold, finally meriting the description "cold as clay." On a *post mortem* examination the cause is quickly ascertained. The irritation arising from the original cause has produced a general and widespread disturbance, in which the blood especially has suffered constitutionally, and no longer flows as in health. It fails to nourish the body, and, moreover, acts as a morbid poison upon the nervous system, which, by failure of function, seriously complicates the disturbance. The lungs are congested, an additional arrest upon blood purification being established, and from this time further complications are superadded which end in speedy death, the result of congestion or stoppage of blood in the lungs.

We have refrained from a detail of the usual order of symptoms marking the stages from the commencement of the original injury or disease, to the setting in and termination of the secondary complaint, as being uncalled for. The veterinary practitioner alone is able to comprehend them. By him they are known as collective signs of the most vital importance, and, as he proceeds with his analysis, during the life of the sufferer, they point to conditions which he may accurately describe, and, after death, establish his conclusions with equal clearness and precision. Such signs are viewed as a whole, and in scientific language they are comprehended under the

terms *Sympathetic*, *Symptomatic*, or *Irritative Fever*, and *Constitutional Disturbance.*

Specific Fever is another general term for denoting peculiar and important states. We need only to observe here that it is applied to those forms of disease which are capable of being propagated among animals of the same class by contact. Essential details will be found under the head of Contagious Diseases.

Treatment of Fever.—As simple fever depends upon the presence of some irritant, it is obvious that the suppression of the disease at the outset alone depends upon the removal of the cause. When this is accomplished nature resumes her position. If we are able at once to control the original disease, and reduce or remove its effects, sympathetic fever is not developed; and if it has already commenced, by mitigating the severity of the first we may remove the second, even when it has attained a degree of intensity. Sympathetic fever always leaves the animal more or less deteriorated. Successful treatment of injuries, &c., is more likely to result from early application, and is always to be recommended.

Inflammation.—The infallible signs are *heat*, *pain*, *redness*, and *swelling*. The first and second are usually evident, but owing to the existence of hair and other coverings common to the animal body, redness and swelling are not so readily observed. Inflammation is the result of violent causes, consisting of an increase of blood in the affected part, with more or less suspended function of the blood vessels, as well as the integral parts of the blood itself. Inflammation is said to be *acute* when the process is characterised by great severity or activity; it is *atonic* or *sub-acute*, when, by reason of low vital force, it proves slow or tardy. Closely allied to this state is a peculiarity of the circulation, mostly common to large organs with abundant vessels and elastic tissues, known as *congestion*. It is sudden in its origin and departure, and is probably confined principally to the venous system.

Inflammation terminates in various ways. By *resolution* or gradual decline, the parts eventually regaining their original state and appearance; in *suppuration* or

the formation of an abscess or sac containing *pus;* in *effusion* from the surface of membranes, as water (serum) or mucus; or by lymph within the structures inflamed, by which permanent thickening or enlargement may be the result.

Inflammation is further distinguished by the structures it attacks. Thus we have *serous* and *mucous* inflammation, as the serous or mucous membranes are involved. When located in the substance of organs it is known as *parenchymatous;* if it seizes fibrous structures, as the coverings of joints, ligaments, tendons, &c., it is *rheumatic;* and inflammation of the skin and deeper seated tissues is termed *erysipelatous.* Beyond these terms we need not pursue the definitions.

The *treatment of Inflammation* may be *local* or *general,* and will be noticed under the several diseases in which the state forms an especial feature.

Abscess.—The formation of *pus,* commonly known as *matter,* among soft parts of the body is known as an abscess. The signs are swelling accompanied with heat and unusual tenderness; and as the abscess becomes complete, the hair is removed from the central or highest portion, which is also moist and even more sensitive. This part is acutely inflamed, and by the process of ulceration within, becomes thin, and movement of the contained fluid is readily perceived by pressure with the fingers. Pressure from within also tends to project the fluid outwards; the central point of the abscess bulges, and, when allowed to pursue its course unaided, the skin gives way, and the pus escapes. In order to avoid this delay, and, in addition also, much animal suffering, as well as hasten ultimate recovery, the surgeon opens the abscess at the required time, by means of a bistoury or a lancet.

Treatment.—The signs already given betoken the favourable progress of an abscess, and should always, if possible, be treated by a surgical operation as we have described. Cleanliness, with occasional poultices or hot fomentations are needed, but as a rule the first is sufficient. Tardy or slow abscesses may be improved by con-

stant fomentations or poultices, and sometimes blisters will be needed. In these states it is occasionally a difficult thing to induce a proper formation of pus. Such is found to exist in connection with a lax or feeble state of the system, favouring diffused abscess or suppuration over the body, and within the internal organs. If such an animal lives he usually proves worthless. Good food, healthy habitations, and tonic medicines, particularly iron, are then called for.

In some instances the abscess lies at a great depth below the surface. Considerable skill is required, first to pronounce with certainty of its existence, and then to reach and liberate the fluid without destroying the surrounding parts or endangering the animal. The discovery of a deep seated abscess is hardly likely to be made by any but a skilful surgeon, and therefore calls for no further allusion here.

SEROUS CYST, otherwise known as *serous abscess*, is commonly seen about the knees and fetlock joints. It consists of a soft fluctuating tumour, without evidences of heat or unusual tenderness, commonly the result of blows, or the animal striking one limb with the foot of the opposite side. The cavity is formed beneath the skin, which is the only covering outwardly, and contains a thin fluid, coloured by an admixture of blood discharged from a few ruptured vessels, or transuded during engorgement in the earlier stages. The cavity is lined by condensed cellular tissue, which materially delays the process of absorption of the contents.

Treatment consists of liberating the contents by means of a bistoury or lancet, the former being preferable, by which division is effected from end to end. A pad of tow, saturated in healing fluid, is afterwards applied and maintained with pressure, which secures healing of the walls. Subsequent enlargement is to be removed by iodine, &c. Great care is needed to discriminate between the serous cyst and bursal enlargements. The latter have been opened by amateurs in mistake, involving serious consequences. The results are violent inflammation, intense suffering, often with ultimate stiffening of

the joint, if the animal does not succumb to the effects of irritative fever.

Prevention of Disease.

This is a department of untold usefulness, and to all who enter upon its consideration in a spirit of earnest inquiry, it promises a rich reward of never ending satisfaction.

It is doubtful if the subject has received serious attention, except in rare instances; in the majority it has met with animated derision, and seldom placed within the domain of impartial criticism.

We propose to consider the subject briefly in its several aspects.

The vast amount of wealth represented by the numerous large studs of hard-working horses in almost every town of the United Kingdom, opens up a wide field for an attempted provision of means for the prolongation of useful lives. The state of the times may forbid any relaxation of the severe strain of daily toil, and on that account alone encourages the adoption of means which shall maintain health and vigour, by an increase of the power of endurance. The period of usefulness may be extended by increasing the power of resistance against wear and tear, and this is secured beyond question by the exercise of care in the *feeding*. It is probable that few persons are seriously conversant with the evils that attend the varied systems at present adopted. The majority of fatal diseases in the horse are directly as well as indirectly the result of defects in this department.

Having already placed our views on this question, based upon long experience, before the public in the work referred to at page 139 (footnote), we do not propose to pursue it at this time. We simply suggest to all concerned the desirability of giving the plan a fair and impartial trial, not confining it to draught horses and others employed in public vehicles, &c., but extending it with, of course, suitable modifications to carriage horses, hacks, and hunters.

Another aspect of the question is presented in the adoption of a system of contract with the attendant

veterinary surgeon. This subject has not, we believe, been generally worked out and applied as its importance calls for. There is a form, usually confined to some large establishments, represented by the employment of a veterinary surgeon, whose sole time and attention is given to the animals on the estate, &c., but the department in which his value and energy would secure the greatest reward, viz., the *feeding department*, is withheld from him. He alone should be at its head; but he, perhaps, has never given it his attention. He is ignorant of its resources, and it is mismanaged by another, providing ample employment for him in medical practice, to which his attention is entirely confined. This branch of the essential department of hygiene is altogether neglected, animal health is deteriorated, and the results are accepted as inevitable, being atoned for by the usual debit entry in the profit and loss account.

The contract system, arranged on a liberal scale, may be made to answer satisfactorily if the veterinary surgeon were retained with the express purpose of preserving health. He would be able to give much useful advice as to work, housing, ventilation, &c., which would diminish the need for medicines, and maintain the working power of the animals. At the present time, however, neither employer nor practitioner have much confidence in such a proposal, few on either side having tested its value.

The adoption of measures for preventing the spread of contagious diseases is an essential department, and should be under the control of the veterinary surgeon. The results also of treating certain affections well known to be *non*-contagious, but which have the character at times of creating great havoc in large studs, would amply repay for the exercise of suitable, and, in a sense, similar measures.

With respect to the first class, we believe the results of large experience preponderate in favour of segregation on definite lines, as laid down in the author's larger works on the horse and cattle.* We are led also to believe the

* "The Horse Doctor," and "The Cattle Doctor." London and New York: F. Warne & Co. Price, 21s. each.

system advocated in the "Handbook," published by the Agricultural Department of the Privy Council in 1887, might be placed within less compass than 854 pages, and a supplement of 33 more, greatly to the advantage of the large number of horse and cattle proprietors, to whom the loss of an animal is not the only inconvenience. Concise legislation is greatly needed, the multiplication of "Orders in Council" rendering confusion doubly confounded.

SENDING FOR THE VETERINARY SURGEON.

Since publishing a few hints on this subject some years ago, we have received so many assurances of their utility that no apology is offered for reproducing them here.

First.—Whenever possible, select a messenger who takes an interest in the animal; one, at least, who has witnessed its sufferings, and is able to afford information in reply to questions from the veterinarian. If a stranger is selected, send *a written message*. Let us urge that on no account shall a verbal statement be entrusted to illiterate persons, as there is great probability that it will assume a totally different complexion before reaching its destination. When sending the first time to the veterinary surgeon, give full name and address, and write plainly as possible.

Second.—Send *early*, or as soon as may be after the appearance of illness, so that the practitioner may see the sufferer in the original attack, and before it is rendered critical by dangerous complications. "A stitch in time saves nine."

Third.—Send as much information, consisting of facts, as possible. Some apparently trivial circumstances may prove of great value to the surgeon. The following suggestive note came to hand early one morning:—

"ASHGROVE, 5th April.

"Please note one of the farm-horses was recently found by the carter covered with perspiration, blowing hard, and unable to bear his weight on the fore-feet. Your attention will oblige."

It was easy to read between the lines in this case, and to make full preparation, which enabled us to bring the case to a satisfactory conclusion, although a journey of five miles lay between. Such a message forms a strong contrast to one we reproduce. It was merely, "Come directly, we have a horse bad." We hurried away to find him suffering from a somewhat unusual affection, for which no preparation could be made under the circumstances, as a special operation was required. Although considerable delay occurred in returning for instruments, the termination was more favourable than might be anticipated.

Fourth.—Always avoid giving medicines in the absence of precise knowledge of the nature of the malady, and the needful remedy. If it is certain the animal is suffering from simple colic, be also as certain that the medicine is equally appropriate. Colic may exist as a distinct and independent affection; it is also frequently seen as *an indication of other diseases*, when the treatment for simple colic would create delays that might prove dangerous.

Fifth.—When mistakes in the administration of remedies have been made, do not hesitate to disclose everything relating to them. Much valuable time is often lost when the practitioner can elicit but little, even by rigid cross-examination. The animal can tell us nothing, while his sufferings are prolonged or aggravated by delay, in which the practitioner may be powerless to act until information is afforded.

These remarks apply to serious and urgent cases principally. Needless and often unpardonable delay is often allowed to operate with reference also to trivial cases, so-called, and irreparable mischief is the result. By the non-observance of system and promptitude, thousands of lives are now sacrificed long before the average term of usefulness has been reached.

CHAPTER XI.

MATERIA-MEDICA.

Medicines, their doses and administration—Alteratives—Anodynes—Antiseptics—Antispasmodics—Aperients—Astringents—Blisters—Caustics—Clysters—Cordials—Demulcents—Diaphoretics—Digestives—Diuretics—Electuaries—Embrocations or Liniments—Expectorants—Febrifuges—Fomentations—Lotions—Poultices—Tonics.

THE combinations, as well as the proportions of remedies, are details calling for important attention in the treatment of disease. In ignorance of the exact action of drugs, strange compounds may be made up, some of which are really no remedy, but, by action upon each other when in contact with the secretions of the digestive system, a powerful poison is generated.

The following are examples of acknowledged remedies, with the usual terms, &c., by which they are known. The practitioner is not limited to these; his intelligence enables him to enlarge and modify the prescriptions in ways it would not be safe to explain to the amateur. *The doses named being intended for horses of large size and coarse constitutions, it will be necessary to make suitable reductions for smaller animals, when special quantities are not stated.* The following calculations may be generally relied upon:—A one-year-old colt will not need more than one-third the quantity prescribed for the adult horse of his particular breed; a two-year-old, one half; and the three-year-old, two-thirds, or thereabouts, the quantity gradually approximating the full dose as the age advances. Grave consideration should also be given to temperament, formation, unusual or deficiency in development, habit, mode of life, character of food, besides other circumstances which cannot here come under review.

ALTERATIVES.

A variety of substances are included under this term which is neither precise nor commendable. It is usually

understood to comprehend those remedies which restore healthy function to organs previously disordered. If this be correct, then all remedies are alteratives.

1. *Powders for Simple Disorders of the Skin.*—Sulphate or nitrate of potash, in fine powder, 1 to 4 drms.; sublimed sulphur, 2 to 6 drms.; powdered gentian, 2 to 8 drms. Mix, and give daily in the food for a week, or as required.

2. *For Chronic Skin Diseases, Grease, &c.*—Fowler's solution of arsenic, 2 to 8 fluid drms.; tincture of gentian, 1 to 2 fluid oz. Mix with ½ pint of linseed mucilage, and give as a drench twice daily for a week.

3. Chlorate of potash, powdered, sublimed sulphur, and powdered gentian or linseed-meal, of each 2 to 6 drms. Mix, and incorporate with the manger-food daily for a week or longer, as required.

Precise information will be found under other remedies which follow.

ANODYNES.

Remedies included in this term are those which have the power of soothing and allaying pain. They do so by quieting the nervous system, and in this way also relieve spasm.

1. *For simple Colic.*—Extract of belladonna, reduced to an emulsion with water, 2 drms.; spirits of nitrous ether, 2 fluid oz.; tincture of opium, ½ oz. Mix and add tepid water to make one pint.

2. *Another form.*—Linseed oil, 1 pint; tincture of opium, 3 fluid oz. Mix, and administer by means of a tin bottle. Useful in colic combined with constipation in large animals. Half the above quantities form the ordinary antispasmodic drench, and as an anodyne in simple diarrhœa.

3. *For Diarrhœa, Superpurgation, &c.*—Powdered kino, 2 drms.; powdered opium, ½ drm.; powdered gentian, 2 drms.; sulphuric ether, 1 fluid oz. Mix, and agitate some minutes in the closed bottle; then add water, or simple gruel, both of which should be cold.

ANTISEPTICS OR ANTIPUTRESCENTS.

These are substances which have the power of destroying offensive odours, especially those arising from decaying or putrefying matter. They are largely called for in preserving the sweetness of stables, when contagious diseases are present, or offensive effluvia arise from the bad state of the floors, drains, &c., and to cleanse wounds, or the woodwork, &c., which may be soiled by the discharges from the former. When used for this purpose they are known as *deodorisers* or *disinfectants*.

1. "*Sanitas*" *Oil* stands pre-eminent for effective service, in any of the above-named departments, when used according to the ample instructions furnished with each supply. It has also a useful place in the treatment of some internal diseases, when attended with putrid discharges, as diarrhœa, metritis, cystitis, &c., which see. For this purpose, and also promoting the healing of wounds, "Sanitas" Oil has been employed in the following form.

1. *Antiseptic Mixture.*—"Sanitas" Oil, 4 parts; glycerine, 4 parts; olive oil, 6 parts. Mix and agitate thoroughly, and keep in a well-corked bottle.

2. *Condy's Fluid* is also effective when applied as directed.

3. Any of the mineral acids, variously known as sulphuric, nitric, acetic, or muriatic, diluted with water in the proportion of 1 part to 100, form very useful antiseptics for wounds and chronic discharges.

4. Chloride of zinc, 3 grs.; distilled water, 1 oz. To form a lotion, or as No. 6.

5. Lunar caustic, 3 grs.; distilled water, 1 oz. To form a lotion, or as No. 6.

6. Solution of sulphurous acid applied by the spray producer, oras a lotion.

ANTISPASMODICS.

Medicines of this class are also anodynes, which see. They have the property of allaying spasm or cramp: hence the term given above. For recipes see Anodynes.

APERIENTS.

Aperients are mild, gentle laxatives or purges. The most powerful are termed *cathartics*, and the mildest *laxatives*.

1. *A Mild Oleaginous Purge.*—Linseed oil, 1 pint.

2. Linseed oil, 1 pint; croton oil, 1 to 5 drops.

3. Barbadoes aloes, 2 to 7 or 8 drms. The extract is first finely powdered, and afterwards caused to form a tenacious paste by means of a small quantity of soft soap. The addition of 1 or 2 drms. of finely powdered ginger promotes warmth and prevents griping.

Aperients or purgative medicine is known in the stable by the elastic term of "physic," the real nature of which is so little understood, that a few remarks will not be out of place. The action alone of purgative medicine often produces much inconvenience to the horse, even in health, and when to this is added the nausea resulting from the digestion of the drugs, one cannot exhibit too much care in preserving the comfort of the sufferer when doomed to their administration, especially during illness. In all cases, if possible, the system should be prepared by previous withdrawal of nearly all hard and dry food, substituting an allowance of bran in the form of mash, which should be continued over two or three days, according to the state of the bowels, and the extent of action required. In healthy working horses of all kinds this is most important, as the full action of a smaller dose of medicine is ensured, with the least inconvenience, and a more certain possibility of a speedy return to the usual duties. In these cases purgative medicine should be given in the early morning, or not later than noon, the mash being supplied immediately afterwards; the animal then remains at rest, chilled water being allowed for drink, and an extra thin rug, or even two, may be put on. In winter time this is very important. Before being left for the night, the tail may be tied up to preserve it from being fouled by the evacuations, and the floor behind may be covered with a thin layer of litter to prevent splashing of the walls, &c., if active purgation comes on in the

absence of the groom. It is safe practice to look in once or more during the night, in case a sudden attack of gripes may ensue, especially if the horse is a fresh one. When free purgation is set up, the animal must not be moved out of the stable on any account, and every attention must be given in order to promote the animal's comfort in the way of warmth. As nausea forms a prominent sign, food, especially sloppy bran mashes, are an annoyance; therefore, when offering suitable material, let it be in small quantity, and, if refused, at once removed. After twelve hours the purgation declines, or "sets," in stable phraseology. During this time the food should still be laxative, that is, bran may form the greater bulk, but a few oats, a handful of barley, malt, &c., may be mixed with it, and as the appetite returns, the increase of the usual food may be gradually made at each meal, until matters are restored to their former condition.

When the physic is delayed in action, it is usual to give a little exercise, varying from a walk to a trot, as may be needful, and thus expedite matters; but on the first appearance of purgation the animal must be returned to the stable. The time best suited for this operation is during warm or temperate weather, and the horses subjected to it should have, at least, from four to seven days' rest from absolute work, gentle exercise taking its place from the cessation of purgation.

The purgation of animals under disease being a part of the rational treatment, details will be found under the various maladies for which it is prescribed.

ASTRINGENTS.

Astringents contract animal tissues, upon which they act either when applied locally, administered by the mouth, or introduced into the circulation.

1. *Lotion.*—Goulard's extract, 2 fluid oz.: cold water, 1 pint.*

2. *Lotion.*—Sulphate of zinc, 1½ drms.; tincture of myrrh, 2 fluid oz.; cold water, 1 pint. Dissolve the zinc in the water; then add the tincture.*

* Label "Poison."

3. *Lotion.*—Sulphate of copper, 1 to 2 drms.; cold water, 1 pint.*

4. *Ointment.*—Acetate of lead, 1 drm.; hog's lard,† 1 oz. Mix.

5. *Ointment.*—Sulphate of zinc, 1 drm.; hog's lard,† 1 oz. Mix.

6, *Powder.*—Sulphate of zinc, 2 to 4 parts; oxide of zinc, 2 parts; Armenian bole, ½ a part. Mix carefully. To be dusted over the parts daily, or as required.

7. *Internal Use.*—Tincture of opium, ½ oz.; powdered catechu, ½ oz.; flour or powdered starch, 2 or 3 oz. Mix rapidly with 8 or 12 oz. of tepid water to form a drench.

8. Powdered opium, 1 drm.; powdered alum, 2 drms.; powdered ginger, 1 drm.; strong tea, 1 pint. Mix for a drench, allowing time for perfect solution of the alum.

BLISTERS.

Blisters are irritant applications which produce active inflammation in the skin, with the formation of vesicles or bladders. The object of their use is to determine the removal of inflammatory action from some deeper-seated part, on the principle of *counteraction* or *overcoming inflammation* thus set up in a healthy part. It is really setting up another disease as a means of curing the first. Horses as a rule are peculiarly sensitive to the action of blisters. A prompt action, when applied during acute disease, is to be regarded as an indication that the latter is being brought under control. When a blister does not *rise*, a fatal termination may be looked for. The following are some of the forms employed.

1. *Liquid Blister.*—Olive oil, 1 pint; powdered cantharides, 1 oz. Mix and heat in a water bath for two hours, then stand aside. When cold add ½ pint of spirits of turpentine, cover up and allow to stand twenty-four hours; then strain through fine calico, and add 2 fluid oz. of oil origanum. To be applied with friction, using very small quantities to ensure contemporaneous absorp-

* Label "Poison."

† Free from salt. Vaseline is a good substitute.

tion. If this is not attended to the fluid will gravitate among the hair, and flow downwards, causing useless and often extreme irritation. In the hands of amateurs the following ointment is safest.

2. *Ointment.*—Powdered cantharides, 2 oz.; oil of turpentine, 2 fluid oz.; oil of origanum, 1 fluid oz.; yellow resin, 1 oz.: hog's lard (free from salt), 16 oz. Mix the cantharides, resin, and lard together, and heat in a water-bath for eight hours; then remove, strain, and set aside to cool a little; next add the turpentine and origanum; agitate thoroughly, after which allow the whole to set.

To ensure the speedy action of a blistering ointment, first clip the hair closely by means of sharp scissors or an efficient clipping machine. Over the part thus denuded the ointment is to be spread in successive quantities, each being thoroughly rubbed in, and at the close a thin layer should be evenly spread over. Great judgment is required as to the quantity used. Finely bred animals do not tolerate more than half the quantity required by a large, coarse draught horse. An excess, therefore, will do harm by exciting undue irritation, and probably lead to ugly blemishing, besides augmenting the original malady.

CAUSTICS.

Substances capable of producing chemical action upon the living tissues are termed caustics. The effect is equi-

The Firing Iron.

The Budding Iron.

valent to burning or decomposition. They are of two kinds—the *actual cautery*, or iron heated to redness; and

the *potential cautery*, viz., mineral and chemical agents, as *caustic soda*, *caustic potash*, and *lunar caustic*, or nitrate of silver. The heated iron is often the most useful, controllable, and effective form of cautery, being employed for stimulating indolent wounds, repressing too luxuriant granulations, abscising tumours, or parts destroyed by sloughing, and arresting bleeding from an artery, &c. The usual form is the firing iron, and the budding iron, as shown in the annexed figures.

1. *Caustic Potash* is conveniently sold in the form of pencils, having been fused and run into suitable moulds. A holder is required for using it. In action it is prompt and powerful; but as it so quickly absorbs moisture from the atmosphere and becomes fluid, it proves unmanageable and expensive.

2. *Lunar Caustic*, or nitrate of silver, is by far the most controllable, being less soluble than the former, and is also very effective. It is also sold in pencils, and requires a silver or platinum tube for use and preservation.

3. Sulphate of copper, burnt alum, verdigris, red precipitate, and corrosive sublimate in powder, are variously used as dry caustics. The latter is violent in action, and unsafe in the hands of amateurs. It should never be used except under the advice of a veterinary surgeon.

4. Muriate, or butyr of antimony, is a powerful fluid caustic, useful for fungoid growths. *It is destroyed by admixture with water.*

5. Sulphuric, nitric, muriatic, and acetic acids are also powerful caustics, and with No. 4 are usually applied by means of a small bundle of tow secured on the end of a stick or probe.

Caustic lotions are made of various degrees of strength, as follows:

6. Nitrate of silver, 5, 10, to 15 grs. to 1 oz. of cold distilled water.

7. Corrosive sublimate, 5 to 10 grs.; muriatic acid, ½ a fluid drm.; cold distilled water, 7½ fluid drms. An effective solution for injecting fistulous sinuses.

8. Sulphate of copper, 10 drms.; sulphuric acid, 1 fluid drm.; water, 1 pint.

9. Chloride of zinc, 3 to 5 grs.; muriatic acid, 5 drops distilled water, 1 fluid oz.

Caustic ointments find their base in hog's lard, vaseline, cocoa butter, &c.

10. Verdigris finely powdered, 1 oz.; hog's lard, 3 oz. Mix.

11. Sulphate of copper in fine powder, 1 oz.; hog's lard, 4 oz. Mix.

12. Burnt alum, 1 oz.; hog's lard, 3 oz. Mix; in each case ensuring thorough incorporation.

CHARGES.

The use of charges is not so common as formerly. They consist of the application of an adhesive compound, in a heated state, to the legs, over which soft tow or a bandage is rolled. These, on stiffening of the compound, furnish an unyielding support as well as pressure, which is considered suitable when the legs exhibit signs of weakness, or there are local swellings, as of tendon, bursæ, &c., which call for reduction. Other measures have largely superseded the practice.

In past days, the plan has consisted of mixing various ingredients as pitch, tar, resin, and lard together, and when these have been melted and thoroughly mixed, some medicament as red or white lead, mercury, arnica, &c., &c., is added, as called for by the state of the legs. To-day, the intelligence of the druggist enables him to furnish the plaster properly compounded as a solid, and in the form of a roll, requiring only to be heated and applied, thus saving much trouble and annoyance, with less liability to mistake.

1. *Simple Lead Plaster* is made use of when the effect of a permanent bandage or support is needed. Care must be observed in the application to avoid unnecessary pressure, or great pain, swelling, and irritation will result.

2. *Mercurial Plaster* is employed for the twofold purpose of support and the reduction of enlargements.

3. *Arnica Plaster* is used when a stimulant action is to be exercised upon the blood-vessels, &c.

CLYSTERS, ENEMAS, OR INJECTIONS.

Clysters are of two kinds, fluid and gaseous. The first are used for unloading the rectum, and to convey nutritious fluids within it for the support of the system when reduced by wasting disease; gaseous enemas are effective in allaying spasm in colic, &c.

Fluid enemas are thus constituted :—

1. Warm water, 90° to 100° F., a pailful; soft or hard soap, ½ lb. Rub the soap down to solution, and inject 1 or more quarts as required.

2. Common salt may be substituted for the soap, when a direct irritant effect is desired.

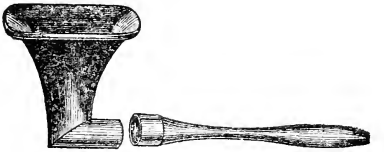
Medicated enemas consist of some remedy added to lukewarm water, gruel or linseed mucilage.

3. Flour or oatmeal gruel, 1 quart; spirits of nitrous ether, 2 fluid oz. Useful when the animal cannot take food.

4. Tincture of opium, 1 fluid oz.; powdered catechu, 4 drms.; solution of starch, as used in the laundry, thickened by boiling, 1 quart.

5. *Gaseous enema.*—Tobacco smoke generated in a suitable apparatus attached to the patent syringe, and passed into the rectum. When needful, the anti-spasmodic effect may be increased by adding opium, or asafœtida.

Various forms of apparatus are employed for adminis-



Enema Funnel.

tering clysters, some of which are intended for other purposes also, and are too expensive for the amateur's purpose. The simplest and most efficacious is the strong tin funnel, a figure of which is annexed. The

pipe, first smeared slightly with simple lard, oil, or soap, is gently passed into the rectum to the extent of two or three inches. The bowl, being upwards, is filled with successive portions of fluid, which readily pass down, attended with a gurgling sound. Messrs. Arnold and Son, surgical instrument makers, 35, West Smithfield, London, supply the instrument for seven shillings and sixpence.

CORDIALS.

Under this term are included the various remedies having warm, tonic properties. They are also simple stimulants, their action being chiefly local, seldom or only slightly influencing the action of the heart. They comprise the various seeds as carraway and cardamom; the peppers, ginger, &c., all of which are reduced to powder as required, and incorporated with other remedies, as salines, aloes, &c., to guard against their cooling, or griping effects, and sometimes also to give tone to the digestive organs on recovery from severe illness, for which they are prescribed with mineral tonics.

DEMULCENTS.

This is a class of useful agents, which having no perceptible medicinal action, may be viewed more correctly as foods, but containing large quantities of mucilage, are useful as mechanical agents, in softening, soothing, and protecting the surface of mucous membranes when under irritation from inflammation. On this account they are prescribed in catarrhs affecting the lungs, bowels, kidneys, bladder, &c.

1. *Linseed Mucilage.*—Linseed, 1 lb.; cold water, 1 gal. Mix, cover up, and set aside, frequently agitating. In twenty-four hours it is ready for use. Add warm water if required. This form of mucilage is a valuable adjunct to systematic daily feeding.

2. Linseed, 4 oz.; boiling water, 1 qt. Let the mixture simmer gently until a mucilaginous solution is obtained, and use when cool. This is useful when No. 1 is not kept constantly in use.

3. Marshmallows, a double handful; hot water, 1 qt. Prepare and use as directed for No. 2.

4. Gum arabic finely powdered, 1 oz.; water, 1 pint. Mix and agitate until a mucilage is produced, and administer one-half for a dose.

DIAPHORETICS.

Although it is admitted that a class of medicines have the property of stimulating excretion by the skin of the horse, the benefit is not of large moment. If it is thought advisable to make use of such remedies, a wise choice will consist of the ethereal stimulants, carbonate of ammonia, &c., assisted by warm clothing, and even the vapour bath.

DIGESTIVES.

These are local agents, employed to stimulate tardy wounds to more active suppuration, and thus promote a healthy state, and more rapid healing. They are also used for dressing setons, and partake of the form of ointment.

1. Strong vinegar, 17 parts; honey, 14 parts; verdigris, finely powdered, 5 parts. Mix thoroughly, avoiding metallic agents and utensils in the operation.

2. Verdigris, finely powdered, 1 oz.; Venice turpentine, 4 oz.; hog's lard, pure, 8 oz.; resin, 1 oz. Melt the resin, then add the lard and turpentine, and apply further heat until the whole are rendered fluid; thoroughly mix, and finally add the verdigris, keeping up the agitation until the mixture in cooling becomes stiff.

3. Resin, 1 oz.; Venice turpentine, 2 oz.; hog's lard, pure, 4 oz. Melt the whole together over a slow fire, mix thoroughly, and set aside to cool.

DIURETICS.

Remedies known to possess the power of stimulating the discharge of urine are called diuretics. They reduce the watery parts of the blood, and thus promote the absorption of fluids effused into close cavities as in hydro-

thorax, or beneath the skin in the familiar form of subcellular infiltration commonly known as dropsy, &c.

1. *Bolus.*—Nitrate of potash, 2 to 6 drms.; extract of gentian, sufficient to cause the mass to adhere.

2. *Draught.*—Dissolve the requisite dose of nitrate of potash in half a pint of linseed mucilage.

ELECTUARIES.

These are syrupy concoctions for conveying medicines to the mouth for the purpose of producing local action. They slowly dissolve, and are carried by the tongue to all parts of the cavity, exerting a beneficial action, when solid or fluid remedies cannot be administered, and the jaws, &c., should be kept in stillness, or, as in sore throat, swollen tongue, &c., &c., the animal is unable to open the mouth or even to swallow.

1. Muriate of ammonia, 2 oz.; camphor, 1 oz.; gum kino, 1 oz. Pulverise each of these separately, then further triturate the whole together; add 2 oz. of linseed meal, and as much treacle—say 1 lb.—as will form a thick paste or syrup. Dose, one tablespoonful placed on the tongue three or four times a day.

2. Powdered catechu, 2 oz.; honey or treacle, 1 oz. Mix, and use as directed for No. 1.

EMBROCATIONS OR LINIMENTS.

These preparations are only for external use, and are designed for various purposes. In some instances it is desirable to stimulate the circulation and hasten nutrition in a part already weakened by disease; in others, the pain and swelling consequent on local inflammation must be reduced; and at a later period remaining enlargements need dispersion before they become permanent.

1. *Stimulating.*—Olive oil, 1 pint; liquor ammonia, 1 oz.; spirits of turpentine, 2 oz. Mix, and apply with friction.

2. *Sedative.*—Extract of belladonna, 2 drms.; tincture of opium, 2 fl. oz.; reduce the extract to an emulsion in a mortar by means of the tincture; afterwards add olive oil, ½ pint. Apply with as little friction as possible.

3. *Soothing and Stimulating.*—Soap liniment (opodeldoc), 8 oz.; tincture of opium, 2 oz. Useful in later stages of acute, also chronic inflammation of the joints, &c.

4. *For Dispersing Enlargements.*—Add to No. 3 tincture of iodine, 2 oz., and agitate to insure perfect admixture. Apply daily with smart friction.

EXPECTORANTS.

Expectorants are employed to excite or promote discharge from the mucous lining of the air passages. In disease of the lungs, bronchial tubes, &c., at the termination of the inflammatory stage, such remedies are often eminently useful. They overcome remaining irritation, remove the cough which it occasions, and promote tranquillity, affording rest and comfort to jaded spirits, greatly facilitating recovery.

1. *Bolus.*—Carbonate of ammonia, finely powdered, 2 or 3 drms.; gum asafœtida, 1 drm.; extract of belladonna, ½ drm. Rub down the gum, to facilitate which use occasionally a few drops of spirits of wine; add the ammonia and triturate, finally rubbing in the extract with 2 drms. linseed meal, and make up a paste by adding treacle.

2. Carbonate of ammonia finely powdered, and carbonate of potash, of each 2 drms.; extract of belladonna, ½ drm.; powdered squills. 2 drms. Mix by trituration, and work into a paste by small additions of oxymel squills.

3. *Draught.*—Spirits of nitrous ether, 1 or 2 oz.; oxymel squills, 1 oz.; extract of belladonna, ½ drm. Rub the extract with a portion of the squills, and when reduced add ½ pint of thin linseed mucilage.

FEBRIFUGES.

Fever medicines or febrifuges comprise a large class of substances, all of which exert their influence more or less on the action of the heart and the constitution of the blood, the general excretions being also augmented, by

which the materials favourable to inflammation are removed.

1. *Bolus.*—Nitrate of potash, 4 drms.; camphor, 1 drm.; digitalis, ½ drm. Reduce each separately to powder, and afterwards triturate together, adding 1 or 2 drms. of linseed meal, and treacle sufficient to make up the mass.

2. Substitute ½ drm. extract of belladonna for the digitalis in No. 1.

3. *Drench.*—Solution of the acetate of ammonia, 4 oz.; tincture of belladonna, ¼ oz.; linseed mucilage, ½ pint.

FOMENTATIONS.

To ensure the real benefit of fomentations with water as a remedy for disease, the following directions should be observed:—

The temperature (about 118° F., and not higher than 120° F.) should be maintained throughout the application, a plentiful and constant supply of water being provided.

The affected parts should be covered from the first with flannel, blanket, or the ordinary rug, folded one to three times, to maintain the heat as much as possible.

Application of the water should be prolonged; in severe cases, as much as four to six hours being required to ensure benefit.

At the close, fresh, dry, and warm coverings should be in readiness to avoid reaction by sudden cooling. In winter time this is doubly important.

The operation is performed as follows:—The animal being suitably placed, a large pail or open tub is brought as near as possible and filled with hot water, the temperature being tested by a thermometer immersed into it, and regulated by needful additions. The coverings are then saturated, partially wrung out, and placed over the affected parts, spreading as widely as needful, when the process commences by carrying successive quantities of water to the highest part, and pouring it over the coverings, keeping up a continuous stream. In this way it is only possible to maintain the desired temperature.

If needful, some economy may be observed by causing the water to flow down into the tub beneath, when the situation of the injured parts is favourable.

Medicated Fomentations are sometimes called for with the view of gaining an additional effect in parts under disease, which is considerably favoured by the presence of heat. Thus in painful affections as inflammation of joints, rheumatism, &c., seeds of the poppy, powdered opium, extract of belladonna, &c., are added to the water with considerable benefit, which the sufferer greatly appreciates. In the case of indolent wounds, cracked heels or legs, grease, &c., fomentations with hot water, to which soft soap and turpentine are added, not only cleanse the parts, but excite the tendency to healthy action. Long standing affections of the skin, attended with horny excrescences or enlarged portion of the epidermis, &c., are treated with advantage by this method, a good remedy being thus formulated :—Glycerine, 2 to 4 oz. ; carbonate of potash, 1 oz. ; "Sanitas" oil, 1 oz., added to a pail of hot water.

INHALATIONS.

These are eminently useful remedies in various affections of the respiratory organs. They are of two kinds, *simple* and *medicated.* The first consists of the application of the vapour of hot water by means of a nose-bag : heat and moisture being efficacious in relieving the congested mucous membranes in simple cold, &c. A quantity of bran, or sawdust, is placed at the bottom, upon which the water is poured as often as required to keep up a good supply of heated vapour ; but care must be exercised in avoiding a heavy load, as the animal, weakened by disease, is not in a state to bear inconvenience from this source. The application should be persisted in for hours, when it proves agreeable and beneficial to the patient.

Medicated inhalations are provided by simply adding some volatile remedy to the contents of the nose-bag, by which sedative, soothing, or stimulating effects are to be produced. Thus in catarrhs, and some forms of in-

fluenza, purpura, &c., "Sanitas" oil, eucalyptus, carbolic acid, creosote, various tinctures, &c., may be used with benefit as advised by the veterinary surgeon.

The *spray distributor* is also a useful agent for the same purpose. Fluid remedies are "pulverised," and thrown in the form of a cool or heated moist vapour into the nostrils, or applied to raw and irritable surfaces. The apparatus is also applicable for purifying the air of buildings, a suitable form of disinfectant being used.

The *inhalation of chloroform* being only called for during some painful and extensive operation, the process will of course be under the sole management of the veterinary surgeon or his qualified assistant. An improved apparatus has recently been introduced to the profession by Mr. Joseph Carlisle, M.R.C.V.S., of Carlisle, which has given great satisfaction. An illustration will be found in the author's larger work, "Every Man his own Horse Doctor."

LOTIONS.

Lotions are generally solutions of approved remedies in water or spirits for the purpose of cooling the parts to which they are applied, and thus reducing pain and inflammation.

1. Tincture of arnica, 2 oz.; spirits of wine, 6 oz.; water, 11 oz. Apply with moderate friction to ensure absorption.

2. Solution of the acetate of ammonia, 4 oz.; spirits of wine, 4 oz.; water, 1 pint.

3. Goulard's extract, 4 oz.; dilute acetic acid, 2 oz.; distilled water, 1 quart.

N.B.—Nos. 2 and 3 may be applied by means of a sponge or rag several times daily, or the parts may be surrounded by a bandage constantly saturated by them.

4. *Healing Lotion for Wounds.*—Sulphate of zinc, $\frac{3}{4}$ oz.; sugar of lead, 1 oz.; tincture of myrrh, 2 oz.; soft water, 1 quart. Shake well before using. This preparation should be dashed upon raw surfaces direct from the bottle.

POULTICES.

The action of a poultice is similar to that of a fomentation, and often proves an effective auxiliary in the restoration of diseased parts to a state of health. The objects are :—1. To apply continued heat and moisture in order to soften or cleanse the parts and promote circulation and suppuration as conducive to the healing process. 2. To maintain a low temperature or cold as may be required by the nature of the disease.

As in the case of fomentations, the benefits derived are the results only of continued application. Great care is needed in order to avoid reaction, which always follows alternate heat and cooling; therefore, when a poultice must be changed, the freshly-prepared one should be at hand to be applied on the removal of the first. The materials should be such as will retain heat and moisture, as bran, the properties of which may be improved by the addition of a small proportion of linseed meal, as $\frac{1}{8}$th or $\frac{1}{10}$th. Poultices of cowdung, and even human ordure, are the suggestions of filthy minds, and should not be tolerated. We have known repeated instances of blood poisoning follow such applications, the animal dying of a putrid fever.

One of the most useful light and effective agents, and at the same time cleanly substitute for a poultice is *spongio piline*. It may be used dry or with hot water, the outer sheet of impervious material retaining the heat most satisfactorily. When weight is an objection, as in strangles, the poultice is beneficially replaced by *spongio piline*.

Medicated Poultices also claim a brief notice. They consist of the usual materials as bran, linseed meal, &c., to which some remedial agent is added. In the case of wounds of an indolent character, digestives (page 164) are thoroughly incorporated with the mass; and when offensive odours arise, as in wounds of the feet, &c., antiseptics (page 155) are added, the principal design being to avoid blood poisoning from absorption of putrid material.

SUBCUTANEOUS INJECTIONS.

The practice of passing suitable medicines beneath the skin has been largely extended of late, ensuring more speedy and efficacious results than are obtained by the usual method. The following are the principal preparations, which may be obtained in the purest form through a local chemist, from Willows, Francis, & Butler, 101 High Holborn, London, W.C., who have earned special reputation for their attention to this branch of pharmacy.

1. *Æther*, a prompt and decided stimulant, promotes the action of other remedies, and especially suitable to follow the use of morphia. Dose, 1 to 3 drams.

2. *Atropia*, an antidote to opium poisoning. Relieves colic and gastric irritation generally, also pleurisy, peritonitis, rheumatism, ophthalmia, &c. Dose, 12 to 20 drops.

3. *Chloral Hydrate*, used in colic, muco-enteritis, tetanus, hysteria in mares and cows, strychnine poisoning, asthma, &c. It reduces the temperature. Dose, 1 to 2 drams.

4. *Conia*, a strong sedative to the nervous system; used for tetanus and all irritability of muscular and nervous tissues. Dose, 1 to 2 drams.

5. *Digitalina*, used in affections of the heart, pneumonia, laminitis, &c.; also broken and thick wind. Dose, ½ dram.

6. *Ergotina*, a general tonic to the muscular system, serviceable in parturition to assist in the expulsion of the fœtus or retained membranes; it arrests hæmorrhage, flooding, &c. Dose, 40 drops to 1 dram.

7. *Morphia*, useful in all cases where opium is prescribed. Especially valuable for chronic cough, being injected direct into the windpipe or larynx. Dose, 10 to 40 drops.

8. *Morphia and Atropia*, a more potent and serviceable remedy than either morphia or atropia when used separately, being used for the same purposes. A powerful remedy in flooding, difficult parturition, inverted womb, severe straining, &c. Dose, 10 to 40 drops.

9. *Physostigmina* has been found useful in promoting the action of the bowels in cases of impaction, constipation, and arresting indigestion, colic, &c. Dose, 20 to 60 drops.

10. *Quina* is valuable in the extreme prostration of influenza, parturition fever, septicœmia, &c. Inject direct into the substance of a muscle. Dose, 20 to 60 drops.

11. *Strychnia*, valuable for overcoming the nervo-muscular weakness of strangles, influenza, lead poisoning, and spinal meningitis. Used with conia for tetanus, with phosphorus for paralysis from injury, and the early stages of roaring. Dose, ½ to 2 drams.

Subcutaneous injections are administered by means of a suitable syringe, armed with a hollow needle. The latter is caused to penetrate a fold of the skin, &c., by which the fluid remedy is passed within the cellular tissue as the piston is forced down the glass tube. It thus enters the circulation at once, and, being unaffected by secretions, as when given by the mouth, also acts more powerfully.

TONICS.

Tonics are those medicines which promote strength and vigour—tone—of the constitution. They are always resorted to in recovery from disease, but require care in their prescription, as too early administration has been known to cause fatal relapse.

1. *Tonic Powders.*—Saccharated carbonate of iron, ½ oz.; gentian in powder, ½ oz.; powdered locust bean, 1 oz. Mix. To be given in the food morning and evening.

2. Sulphate of iron, 2 drms.; gentian in powder, 1 drm.; ground ginger, 1 drm.; locust bean, ½ oz. Mix, &c., as in No. 1.

3. *Drench.*—Saccharated carbonate of iron, ½ oz.; powdered gentian and ginger, of each, 2 drms.; linseed mucilage, ½ pint.

4. *Vegetable Tonic.*—Powdered gentian, Colombo and Cinchona bark, of each, 2 drms.; ground ginger, ½ oz.

5. Substitute 10 to 20 grs. of quinine for the Cinchona bark in No. 4.

Nos. 4 and 5 may be given as a drench by adding linseed mucilage, or they may be combined with mineral tonics, as Nos. 1, 2 and 3.

THE BOLUS, DRENCH, ETC., AND THE MODE OF ADMINISTRATION.

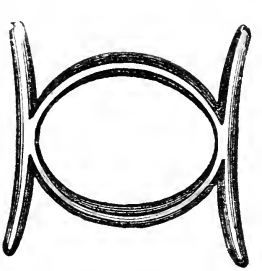
The *bolus* consists of remedies in the solid form, first reduced to powder, afterwards thoroughly mixed by trituration in a mortar, and subsequently incorporated by means of some viscid material to form a paste. It is then rolled into an oblong or cylindrical mass about two and a half inches long, and three-quarters of an inch

Manner of holding the Bolus.

thick. This is an average estimate. The various sizes of animals calling for variable doses will generally regulate the size of the bolus to advantage. It is then wrapped in thin, soft paper, to ensure greater ease and dexterity in its administration, which is usually accomplished in the following manner. If the horse is in the stable, he is reversed in the stall. When out-of-doors it is sometimes advisable to place him in a corner, between two waggons, or other large objects, particularly if he is of an excitable disposition. The right hand is placed flat over the bones of the nose grasping each side, thus to steady the head, while with the left the operator seizes the tongue, drawing it outwards to the offside, the fingers

resting on the lower jaw for support. This will secure the tongue from being drawn out too far. The bolus, being held between the lips, or inserted within the vest pocket for instant seizure, is grasped between the tips of the first, second, and third fingers of the right hand. Thus the first and third are below, and the second is above, as shown in the engraving, and in this form, all the digits converging to a point, the bolus is carried over the tongue to the back part of the mouth, where it is delivered within the grasp of the pharynx, or muscular apparatus which forms the upper portion of the gullet. The right hand is quickly withdrawn, and as the tongue is simultaneously released by the left, it recedes, carrying the bolus still further backwards, beyond the possibility of return. The operator, to ensure success, instantly closes the mouth, and holds the jaws, or passes the shank of the halter round them, above the nostrils. This prevents motion which might favour the return of the medicine when the foregoing directions have not been perfectly carried out. If the operation is successful, the passage of the bolus down the gullet on the left or near side of the neck will put the matter beyond all doubt.

Some horses after a time of illness, or from repeated attempts by inefficient or careless operators, grow very cunning, and even vicious. They will retract the tongue, closely fix the jaws, twist, raise, or depress the head and neck so powerfully, that without assistance one person is useless. Sometimes also the mouth is narrow, and the sharp edges of the molar teeth seriously injure the hands of the operator. Under these circumstances one or more assistants are required to restrain the animal, and a gag, or *balling iron*, as shown in the engraving, is used to keep the jaws open while the ball is passed over the root of the tongue. Much care and patience is needed, while



Iron Gag or Balling Iron.

severe punishment and brutality must be avoided, or existing matters will be greatly aggravated.

Balling guns or *probangs* are made of various kinds and designs for administering solid forms of medicine under the circumstances alluded to in the foregoing paragraph, being sufficiently long for the purpose, while the operator may avoid blows from the fore feet of the animal. Engravings with full description will be found in the larger work on the diseases of the Horse. The hand is the safest for general use, and by means of the iron gag very satisfactory results have been achieved by the exercise of patience, even with crafty or vicious animals. As a last resource such animals may be cast, the effect upon some being a lasting impression of defeat, leading to surprising docility. Pointed sticks should never be used. Avoid boluses when the throat is inflamed and swallowing difficult.

The *Drench* is the fluid form in which medicines are administered. Some animals stoutly refusing a bolus will submit to be drenched. The method is also preferable for many substances, while a more rapid and beneficial effect is produced.

Draughts or *drenches*, erroneously styled "drinks," are often administered by a horn. It is not a safe instrument for all hands, a strong tin bottle, as in the annexed figure, being the most suitable if kept constantly clean. The operation of drenching is performed as follows:—A stout ash stick, five feet in length, is provided with a loop formed of cord, the latter being so large as to admit of being passed over the upper jaw, behind the "tushes." By this the head is raised, the mouth being slightly above the horizontal position, which facilitates the flow of the liquid to the back of the mouth. The operator standing on an inverted pail, or other convenient elevation, on the off, or right side, inserts the fingers of the left hand within the angle of the mouth, and by drawing away the

Oval Tin Drenching Bottle.

cheek, forms a suitable pouch, into which the fluid is poured in small and successive portions as the creature permits it to pass down the gullet. The neck of the bottle, therefore, does not enter the mouth, and injuries from that source are entirely avoided. The tongue must be left entirely free, as it is a most effective agent in carrying fluids onwards to the gullet, and its action greatly facilitates the operation of drenching.

CHAPTER XII.

BLOOD DISEASES

Arising from deranged or inordinate function—Plethora—Anæmia—Rheumatism—Uræmia—Apnæa.

THE maladies we propose to consider here are due to altered conditions of the blood, probably also to hereditary taint, which primarily may originate in the same causes.

PLETHORA, or fulness of blood, is known to consist of an excess of nutritious elements, which circulating throughout the tissues give rise to rapidity of growth, and improvement recognised as "blooming condition." When these appearances attract attention by rapid and unusual development, a change in the mode of feeding is urgently called for, particularly for animals taking little or no exercise. Such should also be purged, and those feeding on over-luxurious pastures must be removed to another where they may work for their living. Administer aperient No. 3, according to directions for apportioning the dose, p. 156. Subsequently a course of neutral salts may be advisable under the advice of a veterinary surgeon.

ANÆMIA.—*Deficiency of Blood.*—This is the reverse state

to plethora—a bloodless state. The circulating fluid lacks the elements of nutrition, and the animal is weak, flabby, wasted, and rapidly wasting. The mucous membranes are pale, the pulse weak and small, and the heart sounds are strangely audible. Dropsical swellings appear beneath the jaws, on the lower parts of the abdomen, as well as inside, causing a "pot-bellied" appearance. The appetite is lost, the bowels are noisy, and wind passes constantly from them. Diarrhœa comes on later, and probably causes a lingering death; otherwise an offensive dysentery terminates the sufferings.

Treatment.—Remove the cause. Supply good food in moderate and regular quantities, with attention to fresh air and water. Treat the diarrhœa as advised (p. 208); followed by tonics 4 or 5, and later alternated with 1 or 2.

Rheumatism.—The *Cold, Joint,* or *Chine Felon* of the old farriers. This disease is due to the state of the blood, having its origin in impaired digestion and assimilation; it is charged with elements inimical to its constitution, an arrest of function probably being the cause of their accumulation and non-removal. The joints are the usual seat of the malady, the offending element locating itself in the substance of cartilage, bones, and tendon, which enter into the formation of the parts. The heart, with its coverings, and the lining membrane of the chest, are also liable to participate seriously and fatally.

Treatment.—Aperients, followed by febrifuges in the acute stages, morning and evening. Hot fomentations are also useful, followed by sedative embrocation No. 2. After the pain and inflammation are subdued, No. 4 may be substituted, twice daily. Fresh air and gentle exercise are essential as recovery progresses. Subcutaneous Injections, No. 2.

Uræmia is a condition of blood poisoning by the retention of those elements which should pass out by the urine. The skin exhales a strong and sickly odour of urine in fully developed cases, the mouth is offensive and slimy, and the fæces are small, hard, glazed and likewise offensive. The end then rapidly approaches; dulness

is followed by insensibility, during which life passes away.

There is no cure for confirmed cases. The only course is to place animals under the care of a qualified veterinary surgeon in the early stages of disease, and, learning the cause, instituting rational treatment in the way of work, food, &c., with the view of preventing the attack in others.

Apnœa.—A form of blood poisoning dependent upon an arrest of the functions of the skin. It arises in the horse as a result of a heavy coat of hair, which growing very long and thick during the autumn, and, being improperly cleaned, is glued together, acting as a covering of some impervious material, by preventing the essential exhalation of sensible, as well as insensible, perspiration. The conditions are slowly established, general lassitude, unfitness for work, and failing health being the common signs, until they ripen into dulness, paralysis and insensibility, which end in death.

Treatment in the early stages is all important. Remove the coat and substitute dry woollen clothing. Enforce rigid cleanliness of the skin, and the habitations. Rouse the system by diffusible stimulants, as spirits of ammonia, spirits of nitrous ether, &c., with which nux vomica is to be prescribed in conjunction with vegetable tonics, &c. The opinion of a veterinary surgeon should be sought at the outset.

CHAPTER XIII.

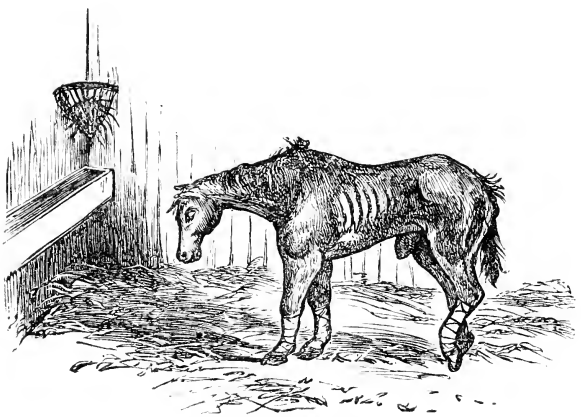
BLOOD DISEASES

Having their origin in inordinate, impaired, or arrest of function, and remarkable for the development of a septic state—Purpura Hæmorrhagica—Azoturia—Malignant sore throat.

These diseases are the analogues of charbon in cattle, and although the development of a septic poison within the blood is undoubted, they do not rank as contagious

in the strict sense; they do not propagate by inoculation. Thus the poison from the blood of a diseased animal does not produce the same disease, but a blood poisoning of a virulent and rapidly destructive character, and this forms the essential difference between the maladies now under consideration and those to be described in Chapter XVI.

PURPURA HÆMORRHAGICA.—This serious affection is also known as *Acute Anasarca*, and *Sanguineous Dropsy*, both of which fail to enlighten the non-professional



Purpura Hæmorrhagica.

reader. It partakes of none of the essentials of an inflammatory disease. The condition of the blood is such as to favour an infiltration of the fluid portions, being blood-stained, within all sub-cellular spaces, and even into the substance of the skin, internal organs, &c. In fully developed cases it is not uncommon to behold a sufferer standing calm and motionless, while large drops, and even streams, of a bloody fluid from a thousand spots, oozes through the hair, and trickles downward to the ground. Large swellings also appear over and beneath the body and legs, but especially at those parts

where the skin is thin; and the mucous membranes show numerous mulberry red-looking spots, which, in common with others on the skin, at a later stage favour the escape of blood. The swellings eventually run into each other, the skin cracks, and discharges of a yellowish colour flow out; then portions of the skin die and slough off, leaving large open ulcers, which do not heal, or at least, not without great tardiness. Sometimes the disease lingers for months in the same creature; hopeful signs occur after the fourth or fifth day in milder cases.

Treatment.—Laxatives or Aperients No. 1, with which nitrous ether may be prescribed. Subsequently nitrous ether and tincture of steel. Vegetable tonics, &c., are indispensable, with small quantities of nutritious food, fresh air, and perfect nursing. Subcutaneous Injections, No. 10.

AZOTURIA, sometimes known as *Nitrogenous Urine*, *Hysteria*, and *Albuminuria*.—A blood disease dependent upon a large quantity of nitrogenous elements in circulation, producing impairment of the nervous system, convulsions, and death in a few hours. It is common in this country to horses and mares of the heavier breeds; sporadic, non-contagious, but communicating septic disease to others by means of inoculation. The attacks are sudden, and confined to the animals in best condition. They are first uneasy, violent colic shortly coming on; the pulse and respiration are greatly disturbed, spasm affects the whole muscular system, especially the loins, and these signs are intensified by the inability to discharge urine. If unrelieved, large swellings occur over the hips and loins; general disturbance becomes intense, stiffness rapidly follows, and ends in paralysis; convulsions are frequent, followed by coma and death.

Recovery is denoted by an early and copious discharge of urine, which resembles boiled linseed oil, having a disagreeable odour, and liable to early decomposition. All other signs now rapidly subside, and the animal is soon convalescent.

The causes are heavy feeding on rich food during very light and irregular work, or enforced idleness.

Treatment.—Aperient No. 3, dissolved in a pint of warm water. Then add one or two drops of croton oil, and 2 oz. of spirits of nitrous ether. If spasm of the neck of the bladder prevents urination, pass the catheter at once: throw up warm clysters frequently, and make up a good bed, frequently turning and making him comfortable. He will possibly lie several days, during which he may receive occasional draughts of nitrous ether, with vegetable tonics, &c. The veterinary surgeon will supplement by nerve stimulants as he sees fit. Gentle exercise only can be borne at first, as considerable weakness ensues in cases not relieved during the first few hours. Feeding must be very careful and henceforth conducted on common sense principles.

MALIGNANT SORE THROAT.—A familiar term is *Putrid Sore Throat*, which gives to the uninitiated a more correct idea of the nature of the affection. Considerable swelling occurs at the back of the mouth, and seen outside the throat, obstructing perspiration and rendering the animal unable to swallow. There is much disturbance, and the local signs of a blood poison are conspicuous in the heavily discoloured membranes, with the mulberry-red spots. Rapid prostration ensues, with early death, and the body is gangrenous already in the parts most affected. Suffocation is generally the immediate cause of death.

Treatment.—The intense swelling of the throat and suffering renders it wholly impossible to administer medicines which have to be swallowed. Wash out the mouth frequently with a solution of alum or borax, with tincture of myrrh added, or use an electuary (p. 165). If the breathing becomes difficult, open the trachea and insert a tube at once. Clear the rectum of hardened fæces by means of clysters, and combat weakness by throwing up fluid food as enemas. Diffusible stimulants may also be used, linseed mucilage being the medium. Subcutaneous Injections, No. 10. As soon as the violence of the disease subsides, the animal will recover the power to swallow, when fluid medicines only may be administered by the mouth, but much care will be needed. From this

point he may be treated under the rules observed for convalescence.

The flesh of animals dying of diseases already discussed should be very deeply buried, but are better burned. The absence of some plan for securing this end paves the way for a periodical visitation of such diseases, the putrid remains after burial finding their way into ponds, brooks, &c., from which healthy animals receive the contamination.

CHAPTER XIV.

BLOOD DISEASES

Arising from an inordinate, impaired or arrest of function, non-contagious and enzoötic—Enzoötic Catarrh—Enzoötic Pleurisy.

THE diseases arranged under this head have the peculiar property of being rapid and simultaneous in their attack, prevailing over vast areas of the country, and creating in non-professional minds a strong belief in their contagious nature. Such characters as have already been enumerated are the strongest proofs of a non-contagious element, and this conclusion will be apparent after the reader has made himself acquainted with the details concerning farcy and glanders.

ENZOÖTIC TYPHOID CATARRH, otherwise *Influenza. La Grippe* of the French. There are few diseases which have such a distinguished record of existence throughout past ages as influenza, attacking man and beast with relentless fury, disappearing as rapidly as it came in, while the devastation has been more serious, widespread, and fatal than any known contagious disease.

Influenza is undoubtedly a febrile affection, of a typhoid character from the first, as denoted by a large amount as well as rapidity of prostration. This is proved

by the results of treatment, which show that while a stimulative plan is most successful, sedatives unmercifully kill in a short space of time. Several forms are also observed, determined by the seat of the affection ; thus, at one time a catarrhal form is observed, then a bilious, or a gastric, each of which may exhibit more or less of rheumatic complication, creating great difficulties in the way of successful treatment. The causes are unknown, but there is strong reason for associating the prevalence with atmospheric disturbance in which volcanic or electrical action may play a conspicuous part.

The simple or catarrhal form exhibits all the characters of a severe cold, with a hacking cough, loss of appetite, surprising weakness, high temperature, swelling of the eyelids, with tardy discharges from the mucous membranes. All the functions of nature are perverted to an extent, more or less, the liver, bowels, and kidneys being conspicuous in this disorder for abnormal action. Diarrhœa is easily provoked, although constipation seems intense, and the kidneys secrete a highly coloured viscid urine, which shows how the system is rapidly breaking down. Congestion of the lungs with pleurisy are common, owing to the condition of the blood and liability to stasis in large and important organs. From this arises the tendency to hydrothorax, by which the creature dies from a process of internal drowning. At other times rheumatism so complicates matters as to seriously delay the disease, at length leaving an animal lame and useless, to whom death would have been most merciful ; and in other instances the end is protracted by diarrhœa and a painful dysentery.

Treatment is essentially of a stimulative nature. When the complaint is ushered in by diarrhœa, give a draught composed of half the usual doses of linseed oil and tincture of opium. Thus a large horse will take ½ a pint of oil and ½ oz. of the latter. Use electuaries when sore throat is present, and rub a mild stimulating embrocation upon the outside. Inhalations of warm vapour medicated with "Sanitas" oil are invaluable when the membranes of the air passages are dry, congested, and dark

coloured. The spray distributer may be used for the same purpose. If the state of the throat will not permit the administration of medicines, clear the rectum by means of clysters of warm water, with which nitrous ether may be mixed, and follow with food enemas, as linseed mucilage containing the same stimulant.

When the creature can swallow, administer a draught composed of aromatic spirits of ammonia, 1 oz.; carbonate of potash, 2 drms.; extracts of gentian and belladonna, of each ½ a drm.; linseed mucilage or water, 1 pint. Rub the extracts with a small quantity of linseed meal to form a powder, add the carbonate of potash and triturate, then add the remainder. The linseed mucilage is useful for maintaining a gentle action of the bowels, but it must be withheld if there are any indications of undesirable looseness, as the patient cannot bear purgation. Should the previous draught disturb the kidneys, substitute nitrous ether for the ammonia. Subcutaneous Injections, No. 10; for Diarrhœa, No. 3.

Promote warmth and comfort by every attention to housing, &c., making use of good clothing, flannel bandages to the legs, &c., &c., as may be desirable. Feed regularly, allowing only small quantities of the best food, with alternations of clean sound roots, even fruits, or any tempting morsel. Patients of the heavier breeds will improve greatly by the removal of the coat at a suitable time.

Enzoötic Pleurisy, like influenza, with which it is often confounded, often prevails at the same time and season. It attacks the fibro-serous structures, and exhibits a great tendency to location within the chest. It makes its appearance also in a similar manner, being marked by lassitude, perspiration, high temperature, severe cough, rapid, small, and hard pulse, coldness with alternate heat of the ears and extremities. The pain within the chest causes the animal to arch his back, draw up the abdomen, fix the legs, and turn the elbows outwards; and when required to move he grunts. The danger of effusion within the chest is great, abscesses may also form within the lungs, and these often carry off the sufferer.

On the other hand recovery does not preserve the animal in a sound state. There may be adhesions of the lungs to the sides, and possibly disease of the heart, its valves or blood-vessels.

Treatment should be prompt. If suffering animals are continued at work they drop down dead. As a rule the stimulative plan as recommended for influenza answers well, but when the fever runs very high, nitrate of potash with aconite may be found useful until the more acute stages are passed. Blisters kill the patient. In order to combat the chest irritation, use a stimulating embrocation, and when the symptoms betoken tranquillity, the stimulants with gentian may be again resorted to.

CHAPTER XV.

BLOOD DISEASES

Having their origin in an unknown Animal Poison, and attended with an Eruptive Fever, or Intumescence, Sporadic, Enzoötic, and occasionally of Septic characters—Scarlatina—Strangles—Suppurative Catarrh.

SCARLATINA, or *Scarlet Fever*, appears occasionally in the horse as a sequel to mild attacks of "influenza." Two forms are recognised—*Scarlatina Simplex* and *Scarlatina Anginosa.*

Simple Scarlatina consists of a number of blotches in the skin, particularly in those parts where it is thin and least covered with hair, as the eyelids, lips, nose, &c. At first these appear as small rounded pimples slightly raised, on which the hair stands erect and separated. The legs swell, and the mucous membranes, notably that of the nostrils, are studded with scarlet spots of variable size, which shortly discharge their serum, finally changing in colour to yellow or a brownish hue. Soreness of the throat is also present, and the appetite is interfered with. In a few days the spots and blotches

decline and disappear by drying up; this causes the cuticle to peel off in numerous scales, which loads the coat with a quantity of scurf, and is removed only with difficulty after a long time.

Scarlatina Anginosa is an aggravated form of the preceding. The blotches and spots cover the skin where it is thinnest, form rapidly, some as rapidly disappearing and reappearing, when they run into each other, producing continuous swellings, finally discharging a thin yellowish fluid. This condition, as it affects the nasal membrane, gives it an almost uniform dark colour throughout, merging from scarlet to purple. The legs swell and "pit" under pressure; the throat becomes very sore, and a constant cough troubles the patient. The breathing is greatly interfered with, fever and temperature are high, and congestion of the lungs succeeds; an acute constipation gives way to an easily provoked diarrhœa; the urine is scanty, thick, mucilaginous, dark in colour, and highly offensive; surface heat and swellings are variable, and death arises from the arrest placed upon circulation and respiration. Favourable terminations are betokened by decline of the acute signs, as sore throat and oppressed breathing, which disappear from the fifth to the tenth day, but leave the animal weak, emaciated, and often for a long time an invalid in consequence of the local swellings and eruptions. Purpura, or even farcy or glanders, may also succeed; therefore the greatest watchfulness must be exercised.

Treatment should follow on the lines laid down for malignant sore throat. Open the trachea to avoid imminent suffocation. Put on a light hood and a thin covering over the body, and apply *spongio piline* to the throat, after being steeped in and wrung out of hot water. Dress the external sores with antiseptic mixtures, 1 or 2, or simply "Sanitas" oil, 1 oz. to 1 pint of water. Clear the bowels by warm clysters, using linseed oil in half the usual doses, only when needed to combat constipation, and *if the animal can swallow.* He may then also have nitrous ether as a stimulant when prostration exists; or high states of fever may be met by

chlorate of potash in the drinking water, or given as a drench. Keep the nostrils, sores, &c., clean, open abscesses early, and use "Sanitas," as already directed, to remove the odours and stimulate healing. Use ammonia when fever has abated, and after a few days and the pulse warrants it, commence the use of mineral tonics, and give very gentle exercise, carefully increased as strength will admit.

STRANGLES.—This affection, common to young animals at the period of domestication, consists of catarrhal symptoms, accompanied with tumefaction, and, in ordinary cases, proceeding to the formation of abscess. During this stage more or less fever is present, with cough, difficult breathing, and general disturbance and suffering, with loss of appetite, constipation, and deficient urine. At first the pulse is full and soft, becoming hard as inflammation succeeds with the maturation of abscess, assuming its normal character as the ordinary course is fulfilled. Adverse states are betokened by congestion of the lungs, thin and dirty fluids flow from the nostrils, and the animal sinks from exhaustion and suffocation. The abscesses do not "ripen," the legs and ears are cold, and swellings appear in other parts which do not always suppurate; emaciation follows, and the creature may contract farcy or glanders, or succumb to disease of the bowels, brain paralysis, &c.

Treatment consists of *good nursing* as the base of the system. Support by good and easily digestible food when the patient can swallow; promote the formation of abscess by blisters, or thick *spongio piline*, applied hot and dry, and secured by a hood. Place him in a cool place, clothe sufficiently but lightly, avoid cold draughts of air. Steam the nostrils, using "Sanitas," when the animal can bear it, but do not distress him by hanging a heavy bag upon his head. Open the abscesses as soon as it can be safely done, as indicated by "pointing;" afterwards maintain cleanliness, using "Sanitas" dressings as directed for scarlatina; give good food in small but repeated quantities, and support by mineral and vegetable tonics, 1, 2, 4, or 5.

Suppurative Catarrh.—This affection is mostly common to animals of mature age, and it is thought, not without a show of reason, that animals, having escaped the usual attacks of strangles in the youthful period of their lives, or having suffered from the bastard or incomplete form, are usually the victims of suppurative catarrh at a more advanced age.

The disease at first appears like strangles, with the usual concomitant febrile states, and abscess of the jaws may be expected. These, however, may recede somewhat, but after some delay they maturate, and the animal does well. Generally the course is the reverse of this. The disease becomes tardy; with the decrease of swelling at the jaws, the appetite and condition fails, weakness comes on, the usual functions of health are not maintained; swellings form at the shoulder, groin, &c., causing much pain and stiffness, and minor ones appear over the skin in numerous places. Not uncommonly a large abscess forms internally, for a time creating great ambiguity in the outward manifestations, and at length discharging the contents, puts an end to the sufferings of the creature. A *post-mortem* examination reveals the fact, of which the animal could give no certain indication during life.

Treatment will be similar to that pointed out for strangles. The hope of cure lies in hastening the formation of abscess in the first instance between the jaws. In some instances when they form elsewhere, superficially, the animal may do well, making a good recovery, but there is reason to believe that this is the exception to the rule.

CHAPTER XVI.

BLOOD DISEASES.

Arising from an Animal Poison—Highly Contagious, and producing the same Disease by Inoculation—Farcy and Glanders.

FARCY may be defined as an incipient form of glanders, consisting of an animal poison, characterised by corded swellings principally situated on the sides of the neck, inside of the legs, &c., and further denoted by rounded swellings at various intervals, and occasional wounds from which these radiate. The cords are veins, swollen as a result of the animal poison, the tumours are further swellings preparing for abortive abscesses, and the wounds are sloughing and widespreading ulcers, which seldom heal, but discharge a thin sanious fluid. Such an animal may live for years and determine the deaths of many others, as well as the attendants. In some instances, however, probably by an accumulation of the original poison, or more correctly, by its development according to the first cause, feverish symptoms arise, the disease assumes an acute form, and the animal dies under loathsome conditions.

GLANDERS in a chronic form succeeds to chronic farcy, and the animal lives on, a common danger to man and beast. The system may have resisted the tendency to the outward manifestations of farcy, as corded veins, &c., but in their place the evidences of poisonous degeneracy are to be found in a variable muco-purulent discharge from the nostrils, sometimes only from one, and that the left; the corresponding glands beneath the jaws are swollen, hard and round, but not large, and ulcers probably are found to exist on the nasal membrane, somewhat high up in the cavity. The animal exhibits a capricious appetite, but his condition may not be altogether bad, and as he continues at work, suspicion is

disarmed. An examination of the chest reveals the existence of abscesses; probably a moist, rattling cough has set in, accompanied by wasting of the body, profuse urination, to which shortly succeeds emaciation, general weakness, and a bloodless state, the animal dying in a hectic state.

The acute form is characterised by swelling of the glands, ulceration of the nasal membrane, dulness, and fever, with a gluey discharge from the nostrils. At a later stage, from some not well-defined cause, the signs of fever increase, lung complications set in, and the animal eventually succumbs. This is the usual course of glanders of the spontaneous variety. In that form, generated by inoculation from the diseased animal, septic blood poisoning follows, accompanied with offensive secretions, stupor, coma, and a rapid, agonising death.

There is no known cure for glanders. As the cause lies in hard work, associated more or less with inferior food, defective stabling, bad air, and often a pernicious system of "physicking" by ignorant carters, &c., prevention of the evil lies in removal of these, and the establishment of rational treatment.

Farcy, on the other hand, may be successfully treated during the early stages, when the general health and condition have not been undermined. Local treatment consists of the application of poultices to the ulcerating farcy buds, and occasional touches with the "budding iron," or caustic potash. They are thus stimulated to healing action, and further inducement is secured by the internal administration of mineral tonics. Give No. 2 morning and evening, after adding 2 drms. of powdered resin.

Cleanliness and disinfection must also be attentively observed, in addition to obedience and conformity to the regulations of the Acts in relation to Contagious Diseases, especially as to giving notice to an inspector. For particulars see the "Handbook for England, Wales, and Scotland," published for the Agricultural Department of the Privy Council, by Eyre and Spottiswoode, London.

CHAPTER XVII.

GENERAL OR SPORADIC DISEASES.

Catarrh—Laryngitis, or Sore Throat—Congestion of the Lungs—Bronchitis—Pneumonia—Inflammation of the Lungs—Pleurisy—Roaring, Whistling, Grunting, &c.—Chronic Cough—Nasal Gleet—Spasm of the Diaphragm—Rupture of the Diaphragm.

THE affections comprehended in this classification are those which have no origin in specific animal or other poisons, and are, therefore, entirely distinct in their nature from any already under review. Neither do they depend upon the operation of widespread causes. As a rule, few animals, generally not more than one among a given number, are affected, and the cause is usually traced to local causes. For the sake of clearness they are grouped according to the class of organ affected, from which they derive their distinctive characters.

DISEASES OF THE ORGANS OF RESPIRATION.

CATARRH, otherwise known as *Coryza* or *common cold*. This simple affection consists of inflammation of the lining membrane of the eyes, nostrils, and sinuses of the head; sudden alternations of temperature, defective ventilation of stables, unusual exposure to wet and cold, and excessive or uncalled-for use of depletive medicines, being among the fertile causes. The membranes referred to are at first dry and deeply coloured, and afterwards secrete, first a thin, transparent, watery fluid, which shortly becomes thick, opaque, of a cream colour, and often profuse. A fit of rigors or shivering usually ushers in the attack, and symptomatic fever is also prominent. Slight cases recover rapidly as soon as a discharge is established, providing other circumstances are equal; but continued operation of the original causes induce complications in the form of disease of other organs.

Treatment.—Investigate and remove the causes. Simple cases are best met by diffusible stimulants, as nitrous or sulphuric ether, aromatic spirits of ammonia, &c.; but when reaction has already set in, indicated by the rapid pulse and respiration, febrifuges are imperatively called for. Inhalations of medicated steam should be applied by means of the nosebag; light, warm clothing and bandages are particularly needful, the skin over the body and legs being previously excited by brushing or hand friction to the latter. If the bowels are constipated, give the medicines in linseed mucilage, and use the latter also as an enema. When the temperature, as ascertained by the clinical thermometer,* shows a marked decline, give tonic powder No. 2 or 3, to which 2 drms. of nitrate of potash has been added.

LARYNGITIS, or *Sore Throat*, is the term used to denote inflammation of the lining membrane of the throat, extending to the surrounding muscles and tissues. It usually follows neglected catarrh, but may have an independent origin through the force of largely prevailing causes. The appetite is absent, swallowing is difficult, painful or impossible, thus solids are ejected and fluids return by the nostrils. Swelling of the throat outwardly is often present, fever and temperature run high, and breathing may be interfered with. A discharge from the nostrils is at first thin and clear, but shortly it becomes purulent; and when the jaws are separated saliva, &c., accumulated in the mouth are liberated. Laryngitis may terminate in bronchitis or pneumonia.

Treatment.—Do not, on any account, attempt to give medicines, fluids or solids, by the mouth. To do so is likely to choke the animal. First relieve the local inflammation by the use of electuaries No. 1 or 2, which must be continued some days. Apply liquid blister No. 1 to the throat. If the swelling is great, by which the breathing is impeded, the trachea should be opened, for which

* See the Author's shilling manual, "The Thermometer as an Aid to Diagnosis in Veterinary Medicine," which should be in the hands of all owners of horses and cattle. London and New York: F. Warne & Co.

the veterinary surgeon is required. With the return of tranquillity of the system the treatment as given under "Catarrh" will suffice.

CONGESTION OF THE LUNGS, or *Pulmonary Apoplexy*, is a stasis or stoppage of blood in the lungs, due to some violent exertion, as overdriving, &c., and supervenes upon other diseases. These conditions cause engorgement and limit the space and power for necessary respiration, therefore we find the animal with straddling legs, his head lowered, and the neck stretched out, nature's means to provide easy and direct passage for the air. The nostrils are dilated, the eyes prominent and staring, and the flanks heave in unison with desperate blowing. The creature is suffering from a form of suffocation. The pulse is almost imperceptible, yet the heart is thumping; blood escapes from the nostrils; partial sweats break out over the body, while the legs and ears are cold; the mouth is dry, hot, and fœtid, and in a few hours he becomes insensible, falls, and dies.

Treatment.—If the animal is seen by the veterinary surgeon within the first hour of the attack, he will set matters right by using a strong diffusible stimulant. As a rule, however, that stage is past, and an opposite course must be pursued. Add to febrifuge drench No. 3, 2 oz. of nitrous ether, and give at once; rub in embrocation No. 1, and make the animal comfortable by gentle dressing with suitable clothing and bandages. Continue the drench until the symptoms lose their severity, the pulse and thermometer indicating a resumption of action in the lungs, when returning strength must be seconded by vegetable tonics, particularly avoiding iron, at least until the very latest stages.

BRONCHITIS—inflammation of the *Bronchial Tubes* within the lungs.—These are the terminal passages of the windpipe, split up like the twigs of a tree, spreading throughout the organs, for conveying the air used in respiration. Inflammation of the bronchial tubes is a common sequel of neglected colds, severe galloping, &c., and sometimes it attacks animals over an entire district, owing to unusual cold and damp, &c. It also follows

the diseases we have already considered in this group. Catarrh and laryngitis may be present from the first, with high fever and temperature, a constant, hacking, and painful cough. The pulse is full and hard, breathing disturbed, and the sufferer relieves the chest as far as possible by standing with the legs wide apart. The bowels are constipated and urine is deficient, but diarrhœa is easily set up, if it is not already present. Further information will be gleaned by the attendant veterinarian by careful examination of the chest, and studying the sounds, as indicating non-complicity with the lungs or otherwise.

Treatment. — Blood-letting is not advisable. Give febrifuges, to which 10 drops of the tincture of aconite may be added, and continue the draught or bolus twice daily, with a decrease of one drop of the aconite in each dose. At the end of the second day perhaps, pulse and other signs being duly taken into account, the aconite may be withdrawn, and the ordinary febrifuge continued for a week or less, according to circumstances. Apply liniment No. 1 to the sides of the chest at the outset, and combat constipation by means of enemas of linseed mucilage. Promote comfort by clothing and bandages, allow plenty of fresh air, avoiding draughts, and as soon as acute signs have passed, a course of vegetable tonics may be prescribed.

Pneumonia, or *Inflammation of the Lungs.* — This disease may follow any one of the preceding, or, commencing with simple catarrh, it may pass, more or less rapidly, through the stages of laryngitis and bronchitis, the inflammation finally being located in the lungs. Pneumonia is ushered in by violent systemic disturbance, with cold ears and legs, the mouth and visible membranes being dry, hot, and injected. The respiration is hurried and short, pulse full and bounding at first, and temperature rises to, perhaps, 102° Fahr. or 103° Fahr. As the lungs become charged with blood, effusion into their substance follows, when the characters of the pulse and respiration are at once altered, the former having become small, weak, and oppressed; the breathing short,

gasping, and disturbed by a cough. Constipation with deficient urination are also present.

Treatment. — Blood-letting is tolerated only in the earliest stages. It is better to rely upon febrifuges with aconite internally, and when the circulation shows the inflammation has somewhat decreased, mustard or embrocation No. 1 may be applied to both sides of the chest, and in other respects treat as recommended for bronchitis.

When horses make tardy recovery from pneumonia, probably owing to previous defects in feeding, &c., &c., they are apt to become weak and useless from the development of abscess in the lungs.

PLEURISY, or *Pleuritis*—inflammation of the lining membrane of the chest and covering of the lung.—The causes are cold or injuries to the chest. It sometimes follows clipping. Extreme constitutional disturbance marks the outset of the disease; pulse and temperature are high, the former being hard, incompressible, wiry, probably running 60 in the minute. The legs and ears are cold, and great restlessness is evident, followed by stiffness, which causes the animal to fix himself to avoid motion, when he "breathes from his abdomen." If cough is present it causes much discomposure. Constipation and deficient urination are evident, appetite is lost, and the animal ceases to notice anything, except as he declines to be interfered with. The respiratory murmur is detected in the lungs, which is accompanied by a creaking or rasping sound as the chest heaves and contracts. The disease terminates in resolution or effusion. In the former case progress is to recovery, in the latter the chest fills with water.

Treatment.—Febrifuges 1 or 2, to which aconite should be added as already advised. Aperient No. 3. Enemas if necessary. Warm clothing and bandages; cool air with security from cold draughts. Embrocation No. 1 to the sides of the chest. When effusion has taken place, nitrous ether should be alternated with the febrifuges, and occasional doses of cantharides may be found useful. All remedies should be used alternately rather than per-

sistence with one kind, and the animal will need the utmost care in every respect. Subcutaneous Injections, No. 2.

Asthma—*Broken Wind.*—When horses have suffered from protracted affections of the chest, inducing violent or constant coughing, or when the inordinate appetite of a greedy feeder is constantly satisfied, the results are asthma, or broken wind. The first, by violent convulsive action, leads to rupture of the air cells, by which several unite to form one cavity, and air is also infiltrated, so to speak, in other parts of the organ and under its investing membrane; the second induces the same by constant pressure from an over-loaded stomach. The result in both instances is impaired respiration, the expiration being performed by two convulsive acts instead of one of uniform character. The disease is remarkable as being attended by a constant, weak cough, not unlike a loud spasmodic sigh. There is no known remedy, as change of structure is great, and the parts cannot be restored to original soundness. Care and simplicity in feeding is of the greatest importance, while humanity should rule in the working of the sufferer. In some cases it is cruelty to work such animals. Subcutaneous Injections, No. 5.

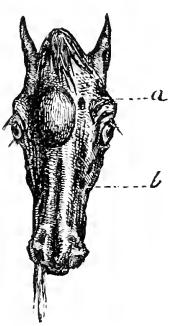
Roaring, Whistling, Grunting, &c., are terms used to denote the degrees of sound emitted by horses in whom respiration is abnormal and laboured under the effects of severe work. These conditions follow repeated sore throat, and are produced by the senseless habit of tight-reining; it is also hereditary. The seat of the disease is the cartilaginous tube, known as the larynx, situate at the top of the windpipe, terminating the mouth at its posterior part. The origin and nature of the sound is due to paralysis of small muscles, the office of which is to open or raise two small cartilages for the ingress of air during inspiration. When the muscles thus become powerless, the cartilaginous lids are drawn downwards during such inspiration, and, therefore, depending much upon the size of the opening thus permitted, the sounds are produced. The louder and harsher sounds are due to a partial closure, while whistling may be caused by a

smaller opening. The presence of tumours, thickening of membranes and of the vocal chords, are also causes, all of which may be present with the first-named. There is no absolute cure. Operations have been attempted as such, but they have brought no reputation to the promoter. A variety of both roaring and whistling may also be produced by causes resident within the nostrils. In such cases we have removed tumours, which effected a complete cure. When enlargement or ossification of cartilages, &c., take place, the results are not so successful.

Grunting is due to similar causes, and is excited usually by fright. There are temporary forms of this complaint, which may be traced to pleurisy, &c., &c. Care is, therefore, necessary for certain discrimination.

Chronic Cough is the consequence of repeated attacks of cold, sore throat, &c., as induced by hot and ill-ventilated stables, undue exposure, &c. It is hard, dry, and persistent, amenable to no treatment, aggravated by careless feeding and repetition of the causes. Give linseed mucilage with the food. Subcutaneous Injections, No. 7.

Nasal Gleet is also one of the conditions which remain as a result of constantly recurring or neglected catarrh. It consists of a chronic inflammation of the membrane lining the sinuses of the head, by which a constant discharge is secreted, some of which is retained in the cavities, becoming thick and offensive; the rest, overflowing, passes down the nostrils, giving the animal a loathsome appearance in the more advanced cases. Some good may be accomplished by injecting astringent fluids, but most cases call for trephining, or opening the affected sinus, for which operation a qualified veterinary surgeon is indispensable. Recent cases may be successfully treated by tonics and astringent injections.



Nasal Gleet.

Spasm of the Diaphragm.—This is the result of

over-exertion in weak and exhausted animals. An unusual violent sound, best described as "thumping," in the region of the chest, not associated or contemporaneous with the pulsations of the heart. It creates alarm, or at least discomposure, in many animals, as it must interfere seriously with the circulation. The spasms occasion alternate tightening and relaxation of the musculo-membranous partition which divides the chest from the abdomen. It is best counteracted by diffusible stimulants, as nitrous, sulphuric, or chloric ether, with perfect rest and quiet. The working condition of the animal should be fairly considered, and, perhaps, overdriving will be discovered as one cause; the other may rest in the food, which is probably deficient in albuminoids.

RUPTURE OF THE DIAPHRAGM is common among draught-horses subjected to heavy work on inferior roads after heavy feeding. We have seen many cases among the horses of builders employed in drawing bricks, rubbish, &c., over the unmade roads common to brickyards and the vicinity of large buildings. With the advent of steam machinery such work is now reduced, and confined to smaller areas. Immediate death follows the accident.

CHAPTER XVIII.

DISEASES OF THE ORGANS OF CIRCULATION.

Palpitation—Rupture of the Heart—Cyanosis, or Blue Disease—Carditis—Pericarditis—Endocarditis—Embolism, and Diseases of the Valves of the Heart—Aneurism—Phlebitis—Megrims—Lymphangitis.

PALPITATION.—We have already noticed the existence of strange sounds in connection with anæmia—the bloodless state. Such are the common results of irregular and intermittent actions of the heart, accompanied with heart-

sounds due to the watery condition of the blood, and functional derangement of the organ, occasioned by improper feeding, &c., not in any way referable to disease. When the blood receives its natural pabulum from a sufficiently nutritious food, the disorder disappears. Palpitation of indigestion, not always attended with the loud sounds of anæmia, is due to similar causes, and disappears when the digestion is improved.

Rupture of the Heart occasionally takes place during severe running, or exertion in drawing heavy loads over unmade roads. The seat of the lesion varies: sometimes it is the junction of the aorta with the left ventricle, or the right auricle as it joins the ventricle. In one instance we saw the first form in a draught-horse, occasioned by a fall over a temporary bridge to a lower level of some fifteen feet.

Cyanosis, *Blue Disease*, is due to the admixture of the blood of arteries and veins within the heart, owing to the non-closure of the *foramen ovale*, an opening which should not exist beyond fœtal life. The animal is weak, faint, and useless, and, if not humanely destroyed, usually lives but a short period. The significant tokens of the malady are the peculiar blue colour of the membranes, with anæmic palpitations. When life is prolonged in exceptional cases, it is due to a small opening only, admitting of slow admixture of the blood.

Carditis, *Inflammation of the Heart*, is not common to the horse. While the organ may suffer in small portions by an extension of the process from contiguous structures, that process does not extend to the whole substance. The organ being so essential to life appears to be wonderfully exempt from such a serious state as inflammation. It is, however, subject to alterations in form—organic changes in the muscular structure, as hypertrophy or enlargement,

The countenance as expressive of pain.

atrophy or wasting, and fatty degeneration, with a peculiar expression of anxiety depicted on the countenance. Such states are but imperfectly made out during life, and admit of no remedy, death usually taking place suddenly.

PERICARDITIS.—Inflammation of the pericardium, or covering, or the heart-bag, arises under two conditions, first as an independent affection, and otherwise a complication with rheumatism and enzoötic typhoid diseases. The malady is from the first associated with high fever and temperature, quickened respiration and circulation, the pulse being hard, irritable, short, and quick, with fluttering action of the heart. The legs and ears are cold, twitchings and cramps affect the body, friction sounds are heard as the heart beats, but these disappear shortly, as the heart-bag becomes filled with water, a product of the disease. The breathing becomes increasingly difficult, the animal exhibits a tendency to faint when the head is elevated, external dropsy appears, weakness is more confirmed, and death takes place in three or four days. Animals surviving this period usually recover.

Treatment.—Febrifuges with aconite in decreasing doses of 2 drops, commencing with 10 drops, every eight hours until six doses have been given. Remove constipation by moderate aperients and enemas conjointly, and, when the urgent signs are suppressed, continue febrifuges without the aconite. Provide warmth and comfort by suitable clothing and habitations, and, as soon as the pulse gives evidence of being under control, with a reduction of temperature, embrocation No. 1 may be used to each side of the chest. The absorption of effused fluids may be promoted by iodine, internally, with diuretics, and the failing strength must be recruited at the proper stage by tonics. Subcutaneous Injections, No. 5.

ENDOCARDITIS.—Inflammation of the lining membrane of the heart occasionally occurs, and is a serious matter. The treatment is similar to that advocated for pericarditis, except in respect to aconite, which requires to be cautiously given in doses of 5 drops only, with febrifuges. In this disease the pulse is liable to exhibit peculiar states of irregularity, which are due to the ex-

treme irritability of the heart. Avoid bleeding and blisters, and use embrocation No. 1 when the acute signs are allayed. Subcutaneous Injections, No. 5.

Embolism and *Disease of the Valves of the Heart* are common results. The first are fibrinous deposits from the blood, which may remain and accumulate in the heart, or, passing with the circulation, enter a blood-vessel and obstruct the passage. Sudden death after a time will result in the first instance, and evidences of the latter are often to be seen in local wasting and paralysis. When the valves are diseased, the animal is weak and faint, and is liable to local swellings, difficult breathing, and sudden death.

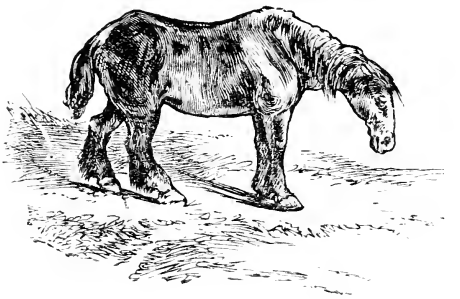
Aneurism, or enlargement of an artery at a given point, is another serious consequence of heart-disease, especially when it affects an important internal vessel.

PHLEBITIS, or Inflammation of a Vein, is commonly seen as a result of bleeding. The swelling should be unceasingly fomented for hours, a strong dose of sedative medicine being first given. Some prefer aloes, to be followed by a powerful blister along the course of the vein, the head being tied up to prevent the animal gnawing or rubbing the part.

MEGRIMS, or Venous Obstruction, is caused by pressure upon the jugular vein from badly-fitting collars, preventing the return of blood from the head. The result is, a species of frenzy is caused, and, after some excitement, shaking the head, &c., the animal darts forward, generally falling headforemost. The collar should be pushed forward, and pressure avoided, on the first manifestation of excitement, or the occupants of the vehicle may come to serious grief. Dash cold water over the head, and take the animal home as soon as possible. He should not be driven unless the collar can be worn comfortably and safely, but his utility as a saddle-horse may be satisfactory.

LYMPHANGITIS.—This is the "Weed," "Thick-leg," "Shot of Grease," "Dropsy," and emphatically "Monday morning" and "Holiday" disease. Errors of diet, with idleness after heavy work, are the causes which, in a few hours, cause considerable disturbance of the system,

with extreme swelling of one of the hind limbs, sometimes, but rarely, in the fore-leg, which the animal can



Lymphangitis.

scarcely move. Heavy draught-horses are common victims, but occasionally a cab-, van-, or even a carriage-horse may be seen among the sufferers. Such an event should stimulate a searching inquiry into the character and fitness of the presiding genius of the stable.

Treatment.—Administer a strong dose of aloes in solution; or give aperient No. 3, and follow immediately with 2 oz. of nitrous ether, while the rigors are present. Promote warmth in the skin by active brushing, and clothe, putting bandages upon the legs. Throw-up warm enemas, foment the leg for four hours, and protect it from cold. See Fomentations. Allow soft, laxative food only, with water from which the chill has been removed, during cold weather. Give walking exercise as soon as he can move without pain.

Elephantiasis.

Lymphangitis of the recurrent kind is likely to terminate in permanent thickening and consequent unsightly enlargement. Such a state is shown in the accompanying figure, to which the term Elephantiasis has been given.

CHAPTER XIX.

DISEASES OF THE ORGANS OF DIGESTION.

Sporadic Aphtha, or Thrush—Diseases and Irregularities of the Teeth—Choking—Vomiting—Chronic Indigestion—Acute Indigestion—Constipation—Colic—Enteritis, or Inflammation of the Bowels—Peritonitis, or Inflammation of the Peritoneum—Diarrhœa—Superpurgation—Dysentery, or Bloody Flux—Worms in the Intestines—Hernia, or Rupture—Dropsy of the Abdomen—Congestion of the Liver—Inflammation of the Liver—Jaundice—Wind-sucking, or Crib-biting.

THE majority of diseases under this head are the result of mismanagement and errors of diet.* With the advent of care and system, disease is reduced to a minimum.

SPORADIC APHTHA or THRUSH.—A faulty system of feeding with food of a questionable suitability, doubtless assisted by conjoint errors, induces dyspepsia and faulty assimilation, bad blood, &c., and the local manifestations are eruptions of small blisters or bladders upon the tongue, insides of the cheek, &c. These greatly interfere with mastication, and impair condition, which, perhaps, is already reduced. Sometimes this simple affection assumes an active character, and is managed only with difficulty.

Treatment.—Febrifuges, particularly chlorate of potash; and wash the mouth with a solution of the same, containing 2 or 3 drms. to a pint of water.

DISEASES AND IRREGULARITIES OF THE TEETH require the attention of the veterinary surgeon without delay, as the condition and services of the animal may be seriously sacrificed.

CHOKING.—Whatever the substance causing the obstruction is, it may be induced to pass down the gullet if a draught composed of 4 oz. of linseed-oil and ½ oz. of sulphuric or chloric ether are mixed, and administered

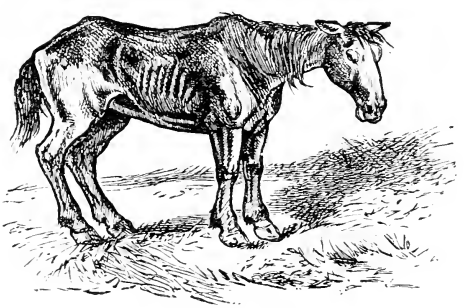
* See the manual, "How to Feed the Horse." London and New York: F. Warne & Co. Price 1s.

with care. If this does not succeed, a second dose may be given in half an hour; otherwise the services of a qualified practitioner must be obtained, who will perhaps pass the probang. Neglected cases are apt to bring about laceration of the gullet, which may endanger life. In simple cases even stricture may be the result, and the creature is repeatedly suffering from choking.

Toothache.

VOMITING is not a natural act in the horse. When it occurs, we may always infer that some abnormal state is present, consisting of inordinate fulness of the stomach, or perhaps some morbid lesion of the gullet.*

CHRONIC INDIGESTION.—This follows as a result ot



Chronic Indigestion.

irregular work and feeding, and is finally developed by the use of all kinds of remedies, the nature of which are not understood by the attendant. Irregular and decayed teeth are also known to be the cause, and sometimes the

* For important information on this subject, see the larger work, "Every Man his own Horse Doctor." London and New York: F. Warne & Co. Price 21s. 300 illustrations.

effect. The signs are conspicuous: Faulty condition, inability for exertion, tight and dirty skin, irregular bowels, repeated diarrhœa, slimy fœtid mouth, all of which finally culminate in disease of the kidneys, farcy, or glanders.

Treatment.—Pay attention to the teeth, and institute a proper system of feeding; regulate the bowels by moderate doses of medicine, as aperient No. 3; restore the balance of action in diarrhœa by linseed-oil, in half the usual doses, combined with half a dose of opium. When a proper action of the bowels is established, commence a course of vegetable tonics, give gentle exercise, and impose suitable work gradually as the condition and ability will admit.

Acute Indigestion, or *Impaction of the Stomach.*—The stomach of the horse is comparatively small, and liable to be gorged with food under various circumstances, sometimes by inordinate manger supply, especially when some change has been made in the variety, and when horses gain access to heaps of corn by accident. Such states are known by the violent agony, rolling, kicking, and plunging of the sufferer, while the constitutional disturbance is extreme, the skin being bathed in perspiration. The excitement may pass into frenzy, or degenerate into coma, insensibility, and death. In other cases the stomach is ruptured, also ending fatally.

Treatment.—The practitioner will first assure himself that hernia is not present. In the first stages, administer a strong aperient, No. 3, which should be dissolved in a pint of warm water, with which 2 oz. of nitrous ether is to be mixed. Throw up enemas constantly. Subcutaneous Injections, No. 1. If there is much distension of the bowels by gas, give hyposulphite of soda in cold water, with a dose of aromatic spirits of ammonia. Put the animal into a roomy barn or shed, and litter down a thick layer of straw.

Constipation of the bowels arises from natural torpidity, debility from previous disease, and paralysis. A bran-mash or enema will remove simple forms, and the use of roots, linseed, &c., may suffice to preserve a proper action. When debility is the cause, vegetable tonics

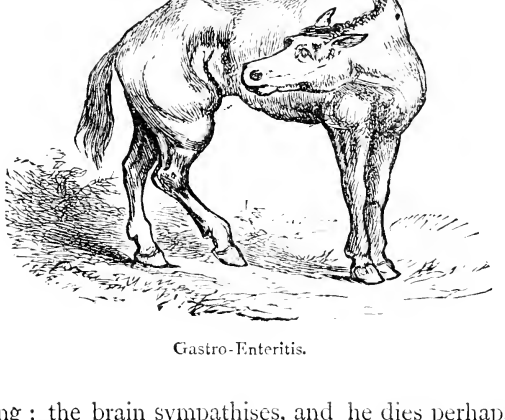
may be prescribed, in which strychnia proves highly beneficial. Subcutaneous Injections, No. 9.

COLIC is the result of derangement of the bowels, often following constipation. Two kinds are observed—spasmodic and flatulent colic. Violent spasm of the muscular coat is set up as a result of some obstruction to intestinal digestion, when sometimes, in addition, fermentation succeeds, and the gases evolved add seriously to the pain by causing distension in addition. Under these circumstances great violence characterises the attack, and the creature groans with pain while he rolls, and is bathed in perspiration. The seat of the pain is indicated by frequently turning the head to the side, and, after looking round despairingly, he again throws himself to the ground, often remaining upon his back some time.

Treatment.—In simple cases, anodynes No. 1 or No. 2. If constipation is present, add aloes; or flatulence, add ammonia. Throw-up enemas frequently, and minister to the safety and comfort of the patient by providing a good bed and a roomy place. Subcutaneous Injections, No. 2, 3, or 9.

ENTERITIS, *Inflammation of the Intestines*, is a rare disease in the horse, and, as usually seen, is due to some irritant or corrosive substance which has gained access to the alimentary canal. The stomach, as a rule, participates. There is no spasm or distension by gas, as in colic, therefore the violence which characterises that affection is not seen in enteritis. Colicky pains may appear in later stages, but they are mild. There is febrile disturbance, the pulse being small, frequent, and hard, becoming weak, indistinct, and running down as the vital processes are interfered with. The temperature is increased, and the diurnal variations, if watched carefully, afford significant indications which by no other means can be attained. The rectum protrudes in frequent straining, and is red and congested in common with other mucous membranes; the abdomen is tender, and the animal stands dejectedly, often turning his nose to the flank; the breathing is short and rapid, and constipation exists as a result of the stoppage of peristaltic action. Great stiffness is present, and

he "moves all in a piece." Listlessness follows, with exhaustion; he lies down, sinks rapidly, and is incapable



Gastro-Enteritis.

of rising; the brain sympathises, and he dies perhaps in insensibility, in time varying from one to six or seven days, according to the severity of the attack.

Treatment.—Purgatives are curatives in these cases, and should be followed by powerful sedatives, as aconite, belladonna, hyoscyamus, &c., with plenty of linseed mucilage for drink. Soothing enemas should also be made use of. When known poisons have been administered or swallowed, the appropriate antidote should be used. Subcutaneous Injections, No. 3.

PERITONITIS, *Inflammation of the Peritoneum*, the lining membrane of the abdomen, chiefly arises from external injuries, operations, &c. Great constitutional disturbance is present, with cold ears and extremities, the pulse is frequent, hard, and wiry, and a dejected appearance, with anxiety, is depicted in the countenance. The animal scrapes with the forefeet, crouches, lies down carefully, and shortly rises again; the bowels are constipated, abdomen tucked up and tense, and the urine is diminished, having a high colour; exhaustion is rapid, and the animal dies at

variable periods, sometimes being insensible, racked by convulsions, or paralytic.

Treatment.—Sudden terminations often prevent anything being done. Aperients, as aloes or oil; febrifuges or draughts, containing aconite or the acetate of ammonia mixture, No. 3, in linseed mucilage. Throw-up enemas. Subcutaneous Injections, No. 2.

DIARRHŒA is commonly a symptom of other diseases, or in usual health it is Nature's remedy for removing substances of an irritant character. It is commonly seen in animals affected with worms, and it also appears as a sequel to disease, and is the means of dissipating the last remains of life. It consists of a discharge of fluid fæces, with more or less pain and straining, and the presence of fœtor often associates it with blood-poisoning, and "breaking up of the system."

Treatment.—Warm enemas to remove irritants from the posterior bowels, and give by the mouth the draught, which is sufficient for a large horse :—Linseed oil, ½ pint; tincture of opium, 1 oz. Mix.

SUPERPURGATION may be described as an aggravated form of diarrhœa, generally the result of excessive or continuous doses of purgative medicines; copious draughts of cold water when heated, or after such medicines have been given; some animals are highly susceptible of the action of purgatives in health, and others are extremely sensitive when reduced by catarrh, influenza, &c. Much care is always needed in prescribing the first time for a patient. The malady is known by a forcible expulsion of liquid fæces associated with uneasiness, straining and colicky pains, nausea, high temperature, unequal surface heat, and complications, as laminitis, congestion of the lungs, sinking, and death.

Treatment.—Superpurgation when suddenly arrested ends in death. Proceed in the first instance cautiously, as laid down for diarrhœa. The food and drink must be restricted to gruel chiefly composed of starch, which should also be used for enemas as well as a vehicle for other remedies; laudanum and sulphuric or chloric ether, 1 oz. of each, forms a good remedy.

DYSENTERY, or *Bloody Flux*. A rare disease in the horse. It is superpurgation associated with inflammation of the large intestines, accompanied with ulceration and hæmorrhage. These serious states have their usual origin in poisons or putrefactive ferments which have been present in drinking-water. Severe pain and straining are accompanied with high fever and temperature; stiffness in movement, especially in turning; tight skin, and in grass-fed animals it is full of vermin; colicky pains, severe straining; blood and mucus is passed, and the rectum is everted, the membrane being highly inflamed; the belly is sore and often distended with gas; the mouth and tongue clammy, furred and offensive, the epithelium peeling off exposing ulcers beneath. The sufferer soon dies if relief is not afforded within a few days.

Treatment.—Oleaginous purge composed of linseed oil, ½ pint, and tincture of opium, 1 oz.; chloroform, ½ drm. The blood discharges may be arrested by oil of turpentine, 2 oz. in milk or starch gruel, 1 pint; and follow with astringents No. 7 or 8. Distension by gas may be arrested by the hyposulphite of soda in water. Promote warmth and comfort by means of clothing, bandages, and gentle dressing. Subcutaneous Injections, No. 3.

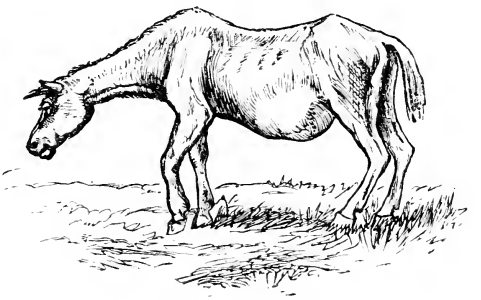
WORMS IN THE INTESTINES are denoted by loss of condition proportionate to the duration of the disorder, harsh, dirty skin, capricious or voracious appetite, licking the wall or eating dirt. Sometimes the animal rubs his tail violently against the nearest object, and an accumulation of the eggs and scales of the parasites is seen around the anus. The sure sign is the presence of worms in the fæces. Diarrhœa is not uncommon.

Treatment.—Aperient No. 3 with 1 or 2 drops of croton oil. Turpentine, 2 oz. in a pint of linseed mucilage, is also valuable, followed by a moderate purge. Follow with iron tonics, 1 or 2.

HERNIA OR RUPTURE is of several kinds, the description of which is too lengthy to be introduced here. It consists of a rupture of the muscular walls of the abdomen or enlargement of some natural opening, the result of accident, by which the small intestines find their way

from the abdomen, and are supported in a sac formed by the skin outwardly, constituting a soft fluctuating tumour of variable dimensions. An operation is generally required, for which the veterinary surgeon is indispensable.

DROPSY OF THE ABDOMEN is the result of confirmed disease of one or more of the internal organs. Tapping



Dropsy of the Abdomen.

is resorted to for drawing off the contained fluid. This, however, affords but temporary relief, and the original disease, still existing, finally puts an end to the creature's sufferings.

CONGESTION OF THE LIVER, the result of errors of diet, is betokened by indigestion, colic, irregular bowels, foul mouth, coated fæces, variable surface heat, and sometimes lameness in the right shoulder.

Treatment.—Brisk purgation, followed by sulphate or nitrate of potash, or diuretics No. 1 or 2. Improve system of feeding, and also work.

INFLAMMATION OF THE LIVER is a rare disease in the horse. It is sometimes difficult to define. The animal is dull and heavy, and often turns his nose to the side as an evidence of internal uneasiness; constipation, with slimy and offensive fæces; the skin, membranes, and urine eventually become yellow; temperature and circulation are high, and the pulse, at first frequent and irregular, becomes slow; when the animal turns he winces and

grunts; relief is apparently gained by effusion (*see* "Dropsy of the Abdomen"), the abdomen swells, wasting of the body proceeds rapidly, and the animal dies in six or eight days.

Treatment.—Aperient No. 3, with aconite; followed by the neutral salts and aconite. Diuretics. Febrifuges.

Diseases of the liver, by frequent occurrence or long continuance, are apt to induce changes in the constitution of the organ, and death may arise from softening, rupture, or abscess, the principal signs of which are as follows: heavy and laboured breathing, abdominal pains, pale membranes, running down pulse, dilated pupils, unequal surface heat, fainting, insensibility, and death.

JAUNDICE, or *The Yellows*, is due to the presence of biliary matter in the blood, which has the effect of staining the mucous membranes and the scurf which is thrown off from the skin, as well as the skin itself, all the tissues of the body, the secretions, and also excretions. Unrelieved or constantly recurring states ultimately degenerate into anæmia and a lingering death. A proper examination should be made with the view of determining the true cause, which may be congestion, want of nerve power, scirrhus, &c., when treatment is to be pursued accordingly.

WIND-SUCKING, or *Crib-biting*, is the act of the animal which is designed to favour the expulsion of air, the result of fermentation, from the stomach. The method of cure is based upon measures calculated to remove *dyspepsia*, to which the animal is subject. It is mostly confined to idle and pampered horses of the higher breeds.

CHAPTER XX.

DISEASES OF THE URINARY ORGANS.

Diabetes Insipidus, or Profuse Staling—Retention of Urine—Oxaluria—Traumatic Albuminuria—Nephritis, or Inflammation of the Kidneys—Hæmaturia, or Blood in the Urine—Cystitis, or Inflammation of the Bladder—Inversion of the Bladder.

SETTING aside direct injuries, and the effects of cold, we may state the more frequent causes of disease in the urinary organs are errors of diet; but the list is not a long one, as even among defective systems of feeding, the animal, unlike mankind, is less an animal than himself. Conditions are forced upon him, and he suffers from the faults and ignorance of man. On the other hand, man suffers from his own folly. Drink and gluttony seriously reduce his usefulness and shorten his life. These, when all things are equal, do not operate with the horse. If he were left to his own choice he could show his master excellent rules for living not only long, but perfectly happy lives, as secured by robust and sound constitutions. The higher creature, who has much to answer for, is really more frequently the lower, as compared with the horse.

DIABETES INSIPIDUS, or *Profuse Urination*, is the result of inferior food, severe work, and exposure in its common form; but it may arise in complication with wasting diseases, as glanders and farcy. In the first instance it may assume the form of an enzoötic, owing to peculiar seasons rendering the food unsuitable, and otherwise defective. The principal indication is a large and constant flow of pale and watery urine, a capricious appetite, which causes the animal to lick the walls and even eat dirt, excrement, &c. The condition falls off, the animal is unhealthy, weak and utterly unfit for work.

Treatment.—Aperients to rouse the bowels to orderly action. Institute a proper system of feeding. Put car-

bonate of soda or potash into the drinking water. *Avoid all diuretics, especially saltpetre or nitrate of potash.* Give iodide of potassium in 2-drm. doses, with common mass as a bolus, twice daily. Some practitioners prefer iodine. Thus far for simple cases. When diabetes depends upon wasting diseases, the best course is to put the animal out of misery by a speedy and painless death.

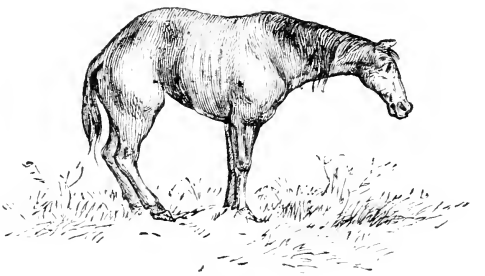
RETENTION OF URINE leads to distension of the bladder, and if not relieved, to bursting or rupture. The causes are unsuitable remedies, first increasing the secretion of urine; second, spasm of the neck of the bladder. These, by frequent operation, may result in paralysis of the bladder. Errors of diet also operate strongly, and induce the formation of solid masses in the kidneys or bladder; and other organs may press unduly upon the neck of the bladder and prevent the flow. In all cases a strict and careful examination should be made before any medicines are given. The general plan will be to pass the catheter, for which the veterinary surgeon will be required. In the mare this is simple, and easily performed, but in the horse much tact and patience are required.

OXALURIA.—A profuse discharge of urine having a deep straw or amber colour, associated with dyspepsia, stiffness, general unthriftiness, and want of condition and power, and the skin loaded with a bran-like scurf. The mouth is foul, and the animal suffers pain with each urination.

Treatment.—Medicines are of no avail where the system of feeding is defective. Remove constipation by a judicious use of aperients. At first avoid food rich in starchy matters, as roots, peas, beans, &c., and condimental foods which contain locust beans. A few oats, with bran and sweet clover chaff will be most suitable. Give only gentle exercise daily without tiring the patient; clean the skin thoroughly by the damp wisp, or make use of the Roman bath. Give nitro-hydrochloric acid, 1 drm., in an effusion of quassia, 1 pint; and if debility is great, add nitrous ether. At a later stage give iron tonics, No. 1 or 2.

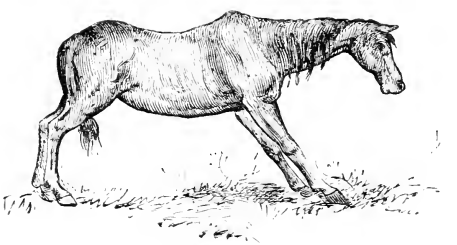
TRAUMATIC ALBUMINURIA.—The urine, sometimes

copious, is loaded with albumen, and resembles mucilage. Acute cases are usually the result of injury, as sprains of the back, and injudicious use of cantharides, when the animal stands with his back arched and the feet drawn



Acute Albuminuria.

together. The pulse and respiration are then much disturbed, surface heat unequal, constipation, &c. A chronic form is induced by defective feeding, when the animal stands with the back arched downwards and the legs



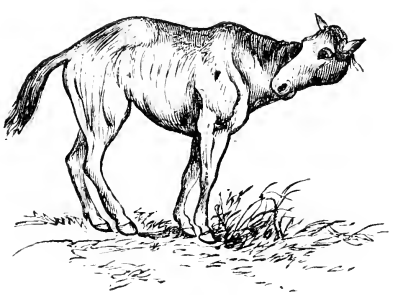
Chronic Albuminuria.

stretched before and behind. Death arises from disease of the kidneys.

Treatment.—In the acute form aperients, as No. 3, with enemas. Remove the urine by means of the catheter at intervals. Poultices to surfaces blistered with cantharides

to promote suppuration. If stranguary continues, let the catheter remain, and give anti-spasmodic injections, as opium or belladonna; also give a draught by the mouth. When acute signs have passed, tonics may suitably follow. Tannic acid is useful for arresting the flow of albumen.

NEPHRITIS—*Inflammation of the Kidneys.*—This disease arises from similar causes, as already given, and is known by the great amount of acute disturbance, colicky pains, great thirst, hot mouth, stiffness and arched back, painful urination, a small quantity only being voided, which contains albumen. One kidney only may be affected, when the leg of that side sometimes exhibits signs of paralysis.



Nephritis.

If the urine is retained blood poisoning follows, the fæces, skin, and breath giving off the odour of urine.

Treatment.—If the bowels are costive, give an oleaginous aperient, No. 1 or 2. Febrifuge drench, No. 3, should follow in about two hours, and continued two or three times daily. A stronger remedy will be found in ½-drm. doses of opium in a ½-pint of mucilage, and allow the latter for drink if the animal is thirsty.

HÆMATURIA, or *Blood in the Urine*, may arise after any of the preceding diseases, or injuries caused by sprains of the loins, &c., and is accompanied by most of the signs of nephritis, the distinguishing proof being the presence of blood.

Treatment.—Injections of cold water; astringents, No. 7 or 8, internally; or substitute tincture of iron, tannic acid, chloralum, &c. Subcutaneous injections, Nos. 6 or 8.

CYSTITIS—*Inflammation of the Bladder*, may arise from causes connected with the preceding diseases, or directly from the absorption or administration of cantharides. The animal is in great suffering; fever, &c., run high, colicky pains are present, efforts are made to vomit, great prostration, frequent but ineffectual attempts to urinate. If stranguary is present the signs are intense; and when cantharides have been administered the mouth is inflamed and the membrane peels off, while swallowing is painful and difficult.

Treatment.—Purge briskly with aloes. *Avoid oil.* Give mucilage largely by the mouth with the medicines; throw up enemas; evacuate the bladder if needful by the catheter; apply mustard to the loins, and combat the inflammatory action by the febrifuge drench, No. 3, adding aconite if needed, 4 to 6 drops.

INVERSION OF THE BLADDER is an untoward accident at all times, not infrequently complicated and fatal. The services of a qualified practitioner are essential. It occurs only in females, in parturition or during other violent efforts. The efforts of the owner should be directed towards the prevention of injury to the displaced viscus, until a practitioner arrives.

CHAPTER XXI.

DISEASES OF THE ORGANS OF GENERATION.

In the Male:—Urethritis—Phimosis—Paraphimosis—Results of Castration—Hæmorrhage—Abscess—Scirrhous Cord. In the Female:—Flooding—Inversion of the Uterus—Rupture of the Uterus—Rupture of the Abdominal Walls—Vaginitis—Leucorrhœa—Inflammation of the Womb.

DISEASES OF THE MALE ORGANS OF GENERATION.

URETHRITIS—*Inflammation of the Urethra.*—Common to the gelding and entire horse, being most frequent in the latter; arising from external causes, as injuries or cold, and in stallions as a result of too frequent access to the mare when the system is not in good stamina. There is great irritation, frequent attempts to urinate, probably stranguary, troublesome erections, pustular discharge, swelling of the membrane, limiting the diameter of the passage, ulceration of the glands, &c.

Treatment.—Internally, febrifuge drench, No. 3; aconite may be added. If the bowels are costive, aperient, No. 3. Inject astringent solutions, No. 1 or 2, into the urethra. Allow linseed mucilage for drink. In chronic or severe cases the animal must be cast, and a minute examination made for ulcers or other complications.

PHIMOSIS.—Confinement of the penis within the sheath.

PARAPHIMOSIS.—Strangulation of the penis at its upper part, the major part being free, and swollen externally.

Each of these states are usually the result of direct injury or irritation, for the relief of which a speedy operation is required.

RESULTS OF CASTRATION.—These are *hæmorrhage, abscess, scirrhous cord, peritonitis, tetanus, gangrene, glanders, farcy, amarausis,* &c.

HÆMORRHAGE.—Subsequent bleeding may usually be

traced to improper cauterization, or an unhealthy state of the parts. Arterial hæmorrhage, which constitutes the danger, flows in a pulsating stream, the remedy for which is taking up the artery by means of a ligature. For this, the animal, if at liberty, must be recast, the vessel being secured after an incision is made at a higher point.

ABSCESS.—This is common to colts of weak and unhealthy condition, also the result of cold and exposure to wet, &c., after the operation. The abscess forms in the scrotum or the groin, and sometimes extends some distance down the thigh, occasioning great disturbance, loss of appetite, &c., and may end fatally if early attention is not given to the case. When the abscess points properly, the pus should be liberated, as serious pain and inconvenience will be avoided. The animal should be comfortably housed, and well fed with oats, being turned to grass only when the weather is genial.

SCIRRHOUS CORD is known as an enlargement of a fleshy character at the termination of the spermatic cord. It is common to colts of unhealthy constitution, and arises also from morbid irritation caused by caustic clams used in the operation when retained too long; or closing of the scrotum, by which the pustular discharges are retained, communicating septic irritation. The cord is thickened, hard, and enlarged at the end.

Treatment.—The animal must be cast, and the diseased portion excised, the preferable plan being in most cases by the hot iron. The other incidental diseases have been described in their proper places.

DISEASES OF THE FEMALE ORGANS OF GENERATION.

FLOODING after parturition arises from hasty removal of the fœtus, when the membranes are violently torn from their connections; and removal of the placenta too soon from the mare. For a time the hæmorrhage is not suspected, as the blood is accumulating in the womb, and the serious nature of the case is shown by a running down pulse, prostration, pale membranes, staggering gait, general coldness, haggard countenance, partial sweats, convul-

sions, coma and death. At other times there is straining, evacuation of clots and fluid blood, but this is rare.

Treatment.—Plunge the hand and arm into cold water for a few minutes, and afterwards pass it gently into the womb, carefully touching the sides. This is sometimes sufficient. Otherwise inject cold water, and if needful, add a small quantity of perchloride of iron, chloralum, &c. Should these fail, give the tincture of the ergot of rye, tannic acid, perchloride of iron, &c., internally, and apply mustard to the loins. No time must be lost, as the mare suffers most acutely in these states. Subcutaneous Injections, No. 6 or 8.

INVERSION OF THE UTERUS.—This is not a very common occurrence in the mare, but it is always serious in its nature. The organ should be returned as speedily as possible, for which a veterinary surgeon is needed. Subcutaneous Injections, No. 6 or 8.

RUPTURE OF THE UTERUS sometimes takes place during parturition; and it is also known to take place beforehand, when twin foals are present. Death follows as a result of hæmorrhage and violent shock to the system.

RUPTURE OF THE ABDOMINAL WALLS is due to the extraordinary weight of the contents of the womb, and the violent throes of parturition. Sometimes the muscles and skin give way, allowing the contents of the abdomen to escape. In other cases the muscles only are ruptured, and the contents are held by the skin, which forms a large sac, more or less approaching the ground. The consequences are fatal in each case.

VAGINITIS—*Inflammation of the Vagina*, is commonly associated with metritis and metro-peritonitis, and as such is considered under those heads; but it occurs also as an independent affection as the result of local injuries, which chiefly arise during difficult parturition. There is much swelling and discoloration, with irritation and fever. A thin discharge is present at the first, which changes to pus, with which blood is sometimes mixed. As a simple disease it is usually dispersed by ordinary means.

Treatment.—Reduce the fever by means of febrifuge

drench, No. 3. Inject astringents, No. 1 or 2, to which a ½-pint of water is added. The antiseptic fluid, No. 1, 2, or 3, will be also required to repress the tendency to putrid infection, a common cause of trouble in these cases.

Leucorrhœa, or *Chronic Vaginitis*, consists of the discharge of a white, glutinous, and odourless discharge from the walls of the vagina, as the result of a morbid condition. As long as it continues the animal is under an inordinate excitement unfavourable to health and natural pregnancy; besides, the disease may by extension involve the uterus, and tedious complication will be the result.

Treatment.—There is seldom any fever. The tendency is towards debility and want of tone. The bowels should be opened by aperient, No. 1, to which 2 oz. of the tincture of gentian has been added. Allow good food, as cleaned roots, with crushed oats, with which tonic powders, 1 or 2, may be given. As a dressing for the vagina use the astringent lotion advocated for vaginitis.

Inflammation of the Womb—*Metritis.*—This disease follows parturition, as a result of peculiar conditions, state of health, &c., and sometimes in connection with protracted cases. There is also a tendency to involve the lining membrane of the abdomen, the peritoneum when is given to it the name metro-peritonitis. The distinguishing peculiarity is the great tendency which exists to contract septic or putrid conditions of the blood. Fatal terminations are, therefore, common.

The disease is developed at variable periods; late attacks, as a rule, are more favourable for recovery. It commences with rigors, unequal surface heat, swollen genitals, small, hard, and frequent pulse, with increase of respiration and animal temperature; the lacteal and other secretions are diminished, the udder becoming small and flaccid, membranes injected, mouth hot and dry, or covered with a viscid slime. Colicky pains come on, sometimes attended with lameness, when the animal refuses to lie, but she stands with arched back, fixed legs, refusing to be moved. The genitals are now intensely

hot and greatly swollen, and a more or less thick, grumous, coloured, and offensive fluid flows from the vagina. Ulcers have also formed, and a croupous exudate covers the surface. When peritonitis is present, the abdomen enlarges from internal effusion of serum, the symptoms are more intense, and death follows in three to six days, usually by coma or convulsions. Recovery in some instances is marvellously rapid. The animal is apparently in approaching dissolution and an utterly hopeless condition, being left to die. A few hours later she is found bright and cheerful; death has been disappointed of his victim, and the first stage towards recovery is thus accomplished. The most careful treatment is needed, otherwise the state may soon become critical and quickly fatal. The disease is also liable to assume chronic states, and the uterus is filled with fluid which escapes when the sufferer lies down, during the passage of fæces, or in straining during colic. In this stage the system suffers acutely from weakness, loss of condition, or unusual nervous excitement, and the end is caused by pyæmia being established.

Treatment must be prompt and decisive at the outset. Administer a brisk aperient, No. 2 or 3. Time will be gained by using the following: Solution of aloes, 6 to 10 oz.; tincture of aconite, 5 to 15 drops; aromatic spirits of ammonia, 1 oz. in cold water, 1 pint. When blood-poisoning is present, omit the aromatic spirits of ammonia. Wash out the vagina with warm water, to which "Sanitas" oil is added, and frequently inject the same afterwards. The operator will require to exercise care against infection if he have raw surfaces, &c., on his hands. When the bowels have responded, give hyposulphites of soda or potash with aromatic spirits of ammonia, and when the state of the pulse and temperature will admit, give mineral tonics, No. 1 or 2.

In chronic states evacuate the uterus by means of a tube attached to Reid's pump; promote contraction by ergot of rye and stimulants; later, give mineral tonics as above advised.

Prevention.—Remove all healthy animals from the

building, and house them at a distance. Appoint one man to attend upon the sick, who must not go near any other. His clothes should be regularly disinfected, if possible, by being washed in water containing soap and "Sanitas" oil. The latter should be also freely used about the patient and the building. Those who have assisted at the delivery of the mare must also disinfect themselves, and all instruments, ropes, &c., are to come in for a share in the purifying process. Bury deeply all the discharges, membranes, dead offspring, carcass of the mother, &c.; but *the only safe practice is to burn them*.

For details of procedure during parturition in the mare, see the Author's larger treatise, "Every Man his own Horse Doctor," pp. 445 to 520.

CHAPTER XXII.

DISEASES OF THE EYES AND THEIR APPENDAGES.

Conjunctivitis—Specific Ophthalmia—Cataract—Staphyloma—Glaucoma—Amaurosis—Strabismus, or Squinting—Ectropium—Entropium—Laceration of the Eyelids—Warts—Fungus Hæmatodes.

CONJUNCTIVITIS—*Simple Ophthalmia*.—This is the medical term denoting inflammation of the investing membrane of the eyeball, resulting usually from blows, effects of cold, intrusion of grit, oatfliers, &c., &c., and attended with constitutional disturbance. Injuries generally affect one eye, but cold may seize both. The eyelids are closed, tears ooze from between them, and the animal resists an examination. The eye when seen presents a bluish-grey colour diffused over the surface, and this effectually obstructs vision. The membrane lining the

lids, as well as its extension over the white of the eye, is also inflamed. At a later stage the tears give way to a purulent discharge, and ulceration and even blindness may ensue.

Treatment.—Remove foreign bodies; place the animal in a dark stable with proper admission of air; bathe the eye with cold water for one or two hours, and cover with light cloth fixed to the headstall, which is to be continuously saturated with an astringent lotion, No. 1 or 2; remove constipation by mild aperients, Nos. 1 or 2, and follow daily with febrifuges, Nos. 1, 2, or drench No. 3, with a few drops of aconite. Belladonna to the eyebrows, &c., for removing adhesions, and remaining opacity may be treated with a weak solution of nitrate of silver, after all acute symptoms are abated. Subcutaneous Injections, No. 2.

Specific Ophthalmia.—This is inflammation of the deeper-seated structures, liable to recur, and eventually destroy the sight. One eye only, as a rule, is affected, the attack coming on during the night, leaving the eye dull and turbid as seen through the pupil. The blood vessels are injected, the eye is painful and unable to bear the light, the system is greatly disturbed, and the animal suffers in proportion from general interference with all the functions. In a few days the disease suddenly disappears; but it shortly recurs, and by each attack the organ is injured, when finally pus forms in the interior, or the sufferer becomes stone-blind from interstitial deposits of inflammatory exudation.

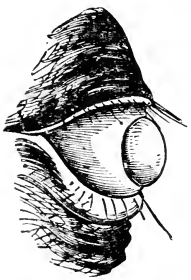
Treatment.—As simple ophthalmia. When these affections accompany an outbreak of influenza, the disease is intractable, and treatment unsatisfactory.

Cataract is caused by inflammatory deposit on the surface of the crystalline lens, sometimes amounting only to a small speck, or extending in others to the whole surface, when blindness is the result.

Staphyloma is the result of repeated attacks of ophthalmia, associated with debilitating tendency, during which the front portion of the eyeball suffers from ulceration of one of its layers. Thus weakness is induced, and

the contents press the membrane outwards, forming a grape-like tumour, associated with blindness.

Treatment for ophthalmia should be early and so prevent this undesirable result. In confirmed cases, astringents 1 or 2.



Staphyloma or Bulging of the Cornea.

GLAUCOMA.—Disease of the vitreous humour, causing intermingling of the fluid, sometimes passing into a state of semi-coagulation, or partially calcareous, partly cartilaginous states, causing perfect blindness.

Treatment is of no avail.

AMAUROSIS.—This is commonly known as *Gutta-serena* or *Glass Eye.* In one form it appears as an accompaniment of brain disturbance arising from sympathy with the digestive organs when affected by poisons, or usual disease. It is also the result of disease of the optic nerve. The first may recover; the latter never. The eye has a staring appearance from extreme dilatation, and is motionless. The pupil has a background which reflects light powerfully, resembling crystal, and blindness is evident from the liability of the animal to run against objects in his way, as well as by the high-stepping and feeling kind of action. Sometimes only one eye is diseased. It often follows specific ophthalmia, and, like it, is incurable.

STRABISMUS, or *Squinting*, is symptomatic of brain disturbance, and is usually removed by such treatment as successfully overcomes that state.

DISEASES OF THE APPENDAGES OF THE EYES.

These are confined to the eyelids and eyebrows, &c.

ECTROPIUM, *Eversion of the Eyelids.* — The lining membrane is exposed in a series of bulging folds, the result of swelling from compression. It is rare, but proves troublesome, and calls for a surgical operation when simple means have failed.

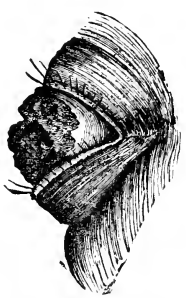
ENTROPIUM is the opposite of Ectropium. The edge

of the eyelids press upon the eyeballs and occasion much irritation and inflammation by movement.

Treatment is by a surgical operation, in which a portion is removed from the upper part of the eyelid. Extreme care is afterward needed to prevent the animal doing injury by rubbing the affected parts.

LACERATION OF THE EYELIDS calls for immediate and careful attention, or complete union is impossible. Recent wounds may be closed by any of the usual sutures, followed by appropriate dressings. Fatal terminations are not uncommon, from the setting in of erysipelatous inflammation.

WARTS occasionally are present on the eyelids or upon the eyebrows, and, when pedunculated, are easily removed by ligature; but, when diffused, present no little difficulty. They appear to be associated with some peculiarity of constitution, and disappear when changes in the system take place.



Fungus Hæmatodes.

FUNGUS HÆMATODES, *Blood Fungus*, consists of a dark-coloured, irregular, and repulsive-looking tumour, protruding from the orbit, growing with remarkable rapidity, and displacing the eyeball entirely. The surrounding bones are sometimes involved, and death eventually arises from blood-poisoning or hectic.

Treatment consists of complete extirpation, which is a formidable operation, and not always successful. Fortunately for the horse, in him the disease is rare.

CHAPTER XXIII.

DISEASES OF THE NERVOUS SYSTEM.

Inflammation of the Brain and its Coverings—Inflammation of the Substance of the Brain—Epilepsy—Chorea—Shivering—Softening of the Brain—Cerebral Apoplexy—Paralysis—Acute Paralysis—Tetanus, or Locked Jaw—Rabies—Hysteria.

PHRENITIS—*Inflammation of the Brain and its Coverings.*—In consequence of the disease assuming two distinct characters, these have, by some, been erroneously considered as distinct diseases. The first, being marked by stupor, slow and stertorous breathing, slow and tardy pulse, with a tendency to thrust his head against some stationary object, &c., it has been termed the *sleepy stage*. The second is marked by excitement, unequal temperature, varying from extreme coldness to profuse perspiration, injected membranes, muscular twitchings, rearing up, hanging back, striking at the rack or manger with the forefeet, staring eyes, hard and wiry pulse, tetanic convulsions, &c., followed by great debility, blindness, and eventually quiescence, with paralysis of the eyelids, lips, or tongue. Such excitement is known as *mad staggers*. These attacks may alternate, but at length the creature sinks and dies in confirmed coma.

In some seasons the disease prevails as an enzoötic, particularly in Scotland, usually traced to the effects of rye grass, particularly the *Lolium temulentum*, or *sturdy*, &c.

Treatment.—Copious blood-letting when the pulse is full and strong; in any other stage it is injurious. Next administer aperient No. 3, to which, for a large and powerful dray-horse, 5 drops of croton oil may be added. Allow plenty of drinking water, apply wet rags to the head, kept constantly saturated with evaporating lotions; diligently use enemas to expedite the purgative; keep the animal perfectly quiet, and, when the attacks of excitement threaten, inject atropine beneath the skin. Bromide of potassium, with strychnine alternately, will be

required as internal remedies at a later stage, when good progress is made. The feeding for some time must be conducted with the greatest care to prevent a return of the disease.

Inflammation of the Substance of the Brain, or *Cerebritis*, is usually associated with strangles and suppurative catarrh, and seldom accurately made out; the end being paralysis, the result of abscess. Under these circumstances, treatment is of no avail.

Epilepsy.—The exact causes of this affection are not the same in all cases. Sometimes it depends upon evident disease of the brain substance, in others there are no evidences of such, when it is thought there may be some remote interference with the flow of blood to the brain, which is the foundation of degeneration of nerve or cerebral tissue. The affection is known by suddenness of attack. A horse in apparent health while walking or standing suddenly shakes his head, throwing it upward and backward, and falls insensible in a state of tetanic convulsions, during which the urine and fæces are voided involuntarily. Usually strabismus, or squinting, is present. Partial sweats occur, the pulse is frequent and hard, and the breathing becomes stertorous. The recovery from the attack is usually speedy.

Treatment.—If worms are present use turpentine with linseed oil, and follow with mineral tonics. Pay attention to the teeth in young animals, or lance the gums to hasten dentition. Use extract of belladonna or hyoscyamus with nitrate of potash, if any irritation of the brain or spinal medulla is suspected. A moderate purgative is always beneficial, followed at the right time by mineral and vegetable tonics.

Chorea.—The equine form of this disease is known as *stringhalt*, characterised by a rapid elevation of one of the hind limbs in progression, &c., the fetlock sometimes actually touching the abdomen. This abnormal action is, however, variable under differing circumstances, and occasionally the disease is attended with twitchings of the muscles of the face, neck, and fore-limbs. Two other forms of chorea are also common to the horse. One is

known as *coma somnolentum*, or *sleepy staggers*. It is the *immobilité* of French veterinarians. The disease commences by dulness and listlessness, and the animal suddenly sleeps while eating his food: the breathing is slow and heavy, and the pulse is full, but rarely numbers more than twenty-four beats in the minute. At a later stage he is acutely sensitive to noises, suddenly falling on his knees at the crack of a whip, &c. He loses the control of the limbs, which are thrown awkwardly about or lock with each other; at other times they are wide apart and become fixed. The loins appear to be weak, and allow the hind parts to swing from side to side. Such animals are described by roguish dealers, as "jerked" or "kinked in the back," and "kidney-droppers." The probable cause is degeneration of nerve tissue.

Shivering, another form of chorea, is indicated by a fit of severe trembling or shivering as the result of fright, ill-usage, &c. The animal suddenly goes backwards, the legs are widely separated, the hocks nearly touch the ground, and the fore-limbs are stretched in front of the body. The head is held upwards, eyeballs retracted, as in tetanus, the lips, neck, and tail are convulsed. The cause appears to be due to the presence of tumours, one or more of which may be found within the ventricles of the brain. Subcutaneous Injections, No. 4.

Softening of the Brain is usually indicated by loss of power in the muscles of the head and face, accompanied with more or less difficulty in breathing. When one hemisphere only is affected the paralysis is confined to one side of the head and face; if both suffer, then both sides of head and face, with the neck, and probably some part of the body are also paralysed. Death usually follows an attack of convulsions. A ravenous appetite often exists during the later stages, and probably an enlarged heart may be suspected during life, being associated with valvular insufficiency, causing dropsical states of the legs, sheath, abdomen, &c. There is no known cure.

Cerebral Apoplexy.—This disease is probably due to some occult form of degeneration of brain tissue, pro-

bably also of the nutrient vessels, in which any sudden pressure from determination of blood disarranges the functions of the sensorium, or, as in many fatal cases, rupture occurs, followed by extravasation. Usually the disease appears without warning, but sometimes it may be preceded by dullness and want of co-ordinate power. In sudden attacks the animal falls helpless, insensible, and paralysed. The only signs of life are those of respiration and circulation, the former being stertorous, and the eyes are wide open and staring. Urine and fæces pass involuntarily, and the legs are mobile, the muscular system being flaccid. Sometimes consciousness is partly retained, when the animal injures himself in convulsions, during which the head is drawn backwards, and the croup forwards and upwards. These attacks of quiescence and convulsions alternate until death closes the scene.

Treatment is usually hopeless. Bleeding only during the comatose state. Strong aperient, No. 3, with enemas; strong embrocations to the spine; internally, belladonna during brain congestion, afterwards strychnine. Recovery is generally little more than partial and delusive.

DISEASES OF THE SPINAL CORD AND ITS COVERINGS.

PARALYSIS.—We have already noticed this disease as it occurs in connection with, and as a symptom of, other affections. It remains to consider it as dependent upon some lesion of the spinal cord or the nerves which originate in it. Loss of power is the distinguishing sign, having its origin in disease or injury of the cord, and when such extends to both sides it is known as *paraplegia;* if one side only is affected it is then spoken of as *hemiplegia.* Loss of power in isolated parts, also in a series or number of members would be understood by the term *paralysis.*

ACUTE PARALYSIS, or *Spinal Meningitis*, is denoted sometimes by gradually developed paralysis; in other instances it is preceded by cramps, spasms, and convulsions, and it may come on suddenly, when fracture or displacement of one or more segments of the vertebræ is

suspected. The presence of acute fever, constipation, &c., will, however, lead to the opposite conclusion. There may be paralysis, more or less, of the ears, eyelids, or lips, or the members on one side of the face only are slightly affected. When the disease attacks the *medulla oblongata*, that portion of the spinal cord which issues from the brain, the breathing becomes stertorous or snoring, and probably the eyes are staring. Uneasiness prevails; the animal often moves in a circle, indicating great want of controlling power, with the tendency to fall. Portions of the skin are already quite insensible, and the loss of feeling is rapidly extending to other parts. In a few hours the power of standing is lost, and he falls, the remaining hours or days of life to be spent in continued struggles, in which violent injuries are inflicted.

Treatment is rarely of use when the animal has fallen to the ground. Slinging is then more likely to do harm than good, as congestion of the lungs speedily develops. When the case is seen in the early stages of acute fever, bloodletting may be practised under great caution. Aperients, febrifuges, 1, 2, or 3, belladonna or hyoscyamus, should be used to calm the irritation of the spinal cord and membranes; followed by bromide of potassium, nitrate of potash, &c., and later by gentian. Draw off the urine regularly by the catheter; promote warmth by clothing and a good bed, turning frequently to prevent injury to the skin. Use enemas to empty the rectum, and let the food be nutritious and of easy digestion.

TETANUS, or *Locked Jaw*, consists of violent spasm or cramp of the muscular system, sometimes due to previous operations or injuries, and at others indicating no particular cause. The whole body may be implicated in the spasm, but the most remarkable signs are fixing of the jaws, rendering mastication impossible, and drawing of the eye backwards in the orbit, which has the effect of protruding the "haw," or *membrana nictitans*. Twitchings are seen over various muscles, the head is elevated, and the nose protruded; the tail is also raised and constantly quivers, and the anus is compressed and smaller

than usual. The pulse is frequent, hard, and small, and respiration is accelerated. The animal swallows with difficulty, and when the lips are separated, saliva flows freely from the mouth. Obstinate constipation exists from the first. Perfect quiescence soothes and calms the sufferer, but he is acutely sensitive to the slightest noises, which prove a barrier to recovery.

Treatment.—Perfect rest and freedom from annoyance of all kinds must be secured; allow plenty of nutritious drinks, free ventilation, comfortable clothing, &c. If the jaws will admit, give a strong aperient No. 3, combined with belladonna, hyoscyamus, &c. Poultice or foment existing wounds, and remove dead or dying tissue, using one of the sedative extracts already named for medicating the application. Inject beneath the skin, also within the rectum alternately, prussic acid, atropine, amyl-nitrate, &c., or use the above-named extracts as electuaries. Subcutaneous Injections, Nos. 3 and 4.

RABIES is the result of inoculation from bites by dogs or cats already suffering from the disease. It is denoted in some animals by unusual excitement, perspiration, frantic pawing and stamping with the feet, and violent attacks with the teeth. The sexual feelings are powerfully developed in entire animals. Floating objects, as paper, &c., occasion great alarm; the pupils are dilated, the vision is impaired, and amaurosis follows. Cramps and convulsions appear in paroxysms, and the creature savagely gnaws the original wound. Swallowing is interfered with, paralysis comes on, and he dies from exhaustion. Other cases are remarkable for the absence of frenzy; the animal does little else than bite the original wound, he lapses into a comatose condition, and falling paralysed, sinks, and dies.

Treatment is of no avail.

HYSTERIA is the development of unusual excitement in mares at or about the period of œstrum. It is attended by violent spasms, the hind-legs being drawn so rigidly that the toes only rest upon the ground. Highly nervous animals will kick, bite, and rear, discharging a quantity of fluid from the vagina, and are quite unmanageable,

violent, and dangerous, when touched, or the harness is laid upon them. The attacks usually end gradually, but they are quickly developed when approached by human beings or animals of the same species. Access to the male often effectually reduces the excitement, which, however, returns at the first period of œstrum after the foal is born. Some affected animals will not breed, are nothing less than a common nuisance, and always a source of danger. Subcutaneous Injections, No. 3.

CHAPTER XXIV.

DISEASES OF THE SKIN.

Erythema—Erysipelas—Nettle-rash—Prurigo—Eczema, Simple and Chronic—Mallanders and Sallanders—Herpes Phlyctenoides—Herpes Circinatus—Impetigo—Pustular Erysipelas, or Grease—Boils, or Carbuncles—Sitfasts.

ERYTHEMA, or *Exanthema*, is an acute form of inflammation of the skin—corium, the result of local irritation. The attendant redness is seen to advantage only in white animals, and those having thin skin. Pressure dissipates the colour, which returns when the skin is relieved. Swelling may be detected by passing the flat hand over from the healthy to the diseased surfaces; the hair on the latter becomes erect, a gelatinous fluid exudes, small vesicles form, the hair is matted, and if the disease continues the discharge becomes purulent, and is succeeded by ulceration with sloughing, when the states are aggravated. Recovery is denoted by drying, peeling of scales, the skin beneath gradually assuming the original condition. The causes are chafing or friction by harness, or one part of the skin upon another, as seen in obese animals; blows, when the swelling takes the form of weals resembling the instrument by which they were inflicted; wounds in clipping; discharges flowing from

wounds, &c. "Mud fever," so called is a common form.

When unequal pressure arises from badly fitting collars or harness, the skin becomes hot, swollen, and tender, probably ending in an abscess, or the skin assumes a loose, flabby, and leathery appearance, standing out like bags, and filled with a gelatinous fluid. This form is known as *Erythema paratrimma.*

The disease in both its kinds is liable to become chronic, especially about the legs, when washing is pursued in a careless manner, and neglect follows.

Treatment.—Remove the cause. Hot fomentations, poultices in the aggravated stages. Febrile states must be met by febrifuges, or even bloodletting. Cold water or evaporating lotions in simple cases. Glycerine with laudanum, solution of lead, &c., is useful; oil also serves to mitigate friction, but rest is essential to perfect cure.

ERYSIPELAS is inflammation of the true skin, sometimes extending to the cellular tissue beneath. The causes are wounds and injuries. In a few days the affected part swells, is hot, tense, sensitive, and shining, the mischief spreading and often involving whole parts or limbs, and when pressure is applied an impress of the finger is left. Sometimes a crop of vesicles appear, followed by decline, when drying and peeling of the cuticle takes place. When a limb is affected, constitutional disturbance is severe.

A more severe form known as *Phlegmonous erysipelas* is attended with violent rigors and severe constitutional disturbance, often involving subjacent tissues as well as the cellular tissue over a large space, taking on pustular formation, and even penetrating joints, &c. Those animals in poor condition often contract glanders.

Treatment.—Aperients and enemas to remove constipation. Febrifuges for the removal of active fever; hot fomentations and poultices, using care that the parts are not cooled afterwards; astringent lotion, No. 1. When debility sets in give tincture of iron with nitrous ether. Open abscesses as early as possible and when properly matured, otherwise the knife will do positive harm.

NETTLE-RASH, or *Urticuria*, consists of a number of elevations of variable size, accompanied with heat and irritation. When the whole body suffers it is known as "surfeit." Plethoric animals are attacked in hot weather as a result of checked perspiration and disordered digestion. Poor animals contract the malady when too suddenly supplied *ad libitum* with rich food.

Treatment.—Aperients and enemas; febrifuges; astringent lotion, No. 1.

PRURIGO is a form of erythema, in which the inflammation is succeeded by numerous pimples, giving rise to intense irritation; and in declining the cuticle peels off, leaving the parts denuded of hair. It is common to pampered and irregularly fed animals, and is liable to recur.

Treatment as for other forms described. Remove the causes.

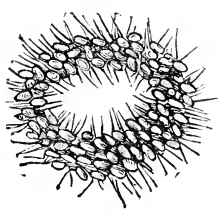
ECZEMA is seen in two forms, simple and chronic. *Simple Eczema* consists of inflammation of the skin, with intolerable itching, rarely attended with febrile disturbance, but always with the formation of successive and luxuriant crops of vesicles, succeeding each other, moistening the skin and hair with their contents, and creating fresh irritation thereby, giving the animal no rest. He rubs and even bites himself violently, and thus removes the hair and the vesicles, exposing raw, red, and irritable surfaces. Drying and peeling of the cuticle takes place as the disease declines.

Chronic Eczema succeeds the simple form when neglected, forming ugly cracks or chasms, discharging an ichorous fluid, and the ridges are surmounted by a mass of enlarged scales of the epidermis standing in perpendicular strata, from which the hairs grow, and being glued together by the secretion, form long projections vulgarly termed "rat-tails." The legs are the parts commonly affected. The disease sometimes succeeds firing and blistering, when horses are little cared for. Sometimes the disease is confined to the back of the knee and in front of the hock joint, when it receives the term "mallanders" and "sallanders."

Treatment.—Open the bowels by aperients; febrifuges, fomentations, and even continued poultices may be required, with ointments of lead, zinc, creosote, iodine, &c.

HERPES.—Two forms are common among horses. *Herpes phlyctenodes* consists of erythema attended with bladders or vesicles larger than those seen in eczema, which locate themselves on the face and lips, also on the coronet or ridge above the hoof, and causing irritation. The hairs become erect, and are held by the growth of a scab, and both falling off together, leave raw, irritable surfaces, which generally heal readily, but are liable to ulceration.

Herpes circinatus, or circular ringworm, known also as vesicular or false ringworm, creeping circle, &c., is a benignant form of vesicular erythema, in which the bladders agglomerate in a constantly widening circle, and at the end of a week or ten days decline, throwing off brownish scales, with fading redness of the skin.



Herpes Circinatus.

Treatment.—Astringent lotion, No. 1, with 1 oz. of laudanum. Febrifuges when needed for febrile excitement.

IMPETIGO, or *Pustular Inflammation of the Skin.*—It is a form of erythema, in which the watery vesicles of the preceding kinds are replaced by small pustules beneath the epidermis or scarfskin. One form attacks the face and lips where the skin is thin, the pustules being speedily converted into yellow crusts or scales, beneath which the skin is thickened and inflamed.

Treatment as for the preceding.

PUSTULAR ERYSIPELAS—*Impetigo erysipelatodes*, or *Grease*, affects the skin of the heels, pastern, and fetlock joints at their back parts. The hind legs are most commonly affected. The primary inflammation gives rise to considerable swelling and lameness, and shortly an exudation of lymph takes place, followed at a later stage

by the formation and discharge of pus. The parts next lose their pliancy, become hard and rigid. The skin cracks, by which deep fissures are formed, from which an offensive discharge constantly flows; while ulceration goes on beneath, fungoid granulations are luxuriant and plentiful, forming what are commonly known as "grapes." The disease now assumes chronic and permanent characters, rendering the animal not only offensive, but dangerous, as none can tell how soon the disease may terminate in farcy. The disease is common to coarsely bred horses, but poverty, dirt, and improper treatment are known among the causes when it appears in animals of higher breed.

Confirmed Grease, showing Grapes and Fissures.

Treatment.—Poultices at first; when the parts are thoroughly cleansed, solutions of salts of zinc, copper, &c., may be applied several times daily (*see* "Astringents"). The remedies should be used alternately, which is preferable to the persistent application of one. The grapes should be touched with caustic potash, solid chloride of zinc, &c., or they may be shorn off by means of the actual cautery, the animal being properly secured. *Internal remedies are of vital importance.* Tonics, No. 2, to which 2 drms. each of resin and ground ginger have been added, should be given twice daily. Fowler's solution of arsenic, in ½-oz. doses, should be sprinkled over the dry manger food twice a day, or put into the drinking water.

Boils, or *Carbuncles.*—A boil is the result of inflammation of the deepest layer of the true skin, together with the cellular tissue beneath. It is a circumscribed swelling, at first of small dimensions, around which inflammation

proceeds, and occasions intense pain. Around this accumulates a plastic exudation, and pus is formed. The central part then dies, and is thrown out, forming what is ignorantly termed the "core."

Treatment.—Poultices or fomentations; general attention to diet; mild aperients, &c.; to change the character of the blood, followed by stimulants and tonics, and probably the use of the knife, with resin ointment externally.

SITFASTS are horny looking excrescences occupying the central part of the long-standing wounds occasioned by pressure.

Treatment consists of dissecting out the mass as the safest, quickest, and most effectual method in promoting a speedy cure.

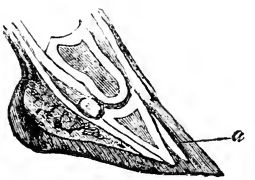
CHAPTER XXV.

DISEASES OF THE APPENDAGES OF THE SKIN.

Laminitis—Coronitis—Sandcrack—Thrush—Canker—Seedy-Toe—Keratoma—Corns.

LAMINITIS—*Inflammation of the Feet*, known also as *founder*, or *fever in the feet*, as implied in the term, consists of an inflamed condition of the sensitive laminæ which surround the coffin-bone, securing the hoof in position; the sensitive sole is also involved, and occasionally the malady extends to the coffin-bone. In slight cases it terminates by resolution, leaving few traces behind; but the general character of the disease leads to deformity of the feet, by interference with the secretion at the coronet, as well as causing a descent of the coffin-bone and the sole, the result of displacement of the latter, with probable changes in it also. Convexity of the sole, or

pumice foot, is the state identified with these changes, and by which the usefulness of the animal is much impaired. Sudden attacks of pneumonia, influenza, superpurgation, and stomach engorgement often give way to inflammation of the feet. Sometimes the disease is confined to two feet only, at others the whole are affected. In the first, he throws the weight of the body on the sound legs, but when all the feet are inflamed the suffering is more intense, and the animal often goes down. There are signs of intense fever with elevation of temperature, and he blows hard. The pain being also great, exhaustion follows, and he is likely to contract congestion of the lungs, from which he shortly dies.



Descent of the Coffin-Bone.

Treatment.—Remove the shoes at the commencement of the attack if possible. Blood-letting, to be of service, should be practised when the pulse is full and strong; scarify the coronet; aperients of moderate strength only, adding a dose of aconite; warm enemas; pass the catheter to test state of bladder, especially if the animal is down. If he persists in standing it may be advisable to try the slings, being a quiet animal; if he will lie give a thick bed, and restrain excited animals by the hobbles, turning frequently. Febrifuge No. 3 drench, adding aconite according to circumstances, and as soon as the pulse is reduced substitute belladonna, &c., with the febrifuges, No. 1 or 2. Subcutaneous Injections, Nos. 5, 7, and 8.

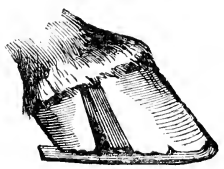
Coronitis—*Villitis*, or inflammation of the rounded band at the top of the hoof, is detected by heat, pain, and often marked swelling, gingerly gait, the heels being first put to the ground. There is also more or less separation from the hoof, which becomes striped, harsh, and brittle from diminished secretion.

Treatment.—Remove the shoes, and apply lead lotions; astringents, No. 1 or 2, by means of wet rags placed over

the pasterns; febrifuges, 1, 2, or drench No. 3. When fever and inflammation are removed, put on thin flat shoes, turn into a loose-box, supplying a laxative diet, and rub in embrocation, No. 3; later, No. 4. Dress the hoof daily with tar ointment, and forbid the ruinous use of the knife and rasp in shoeing.* See Chap. XXIX.

CARBUNCLE OF THE CORONET.—Treat as advised for carbuncle, page 236, and stimulate the wounds with caustic potash, nitrate of silver, &c.; astringent lotions.

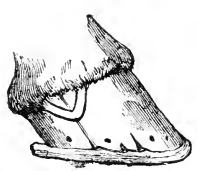
FALSE QUARTER consists of alternate ribs and furrows, in the quarter of the hoof usually, owing to deficient secretion depending upon injury and destruction of the coronet by abscess, carbuncle, &c. The hoof is shelly and weak, and lameness is often of a recurrent nature.



False Quarter.

Treatment.—Remove pressure from the affected part by judicious reduction of the ground surface of the wall, and apply a bar shoe, utilising the frog as a weight-bearer. The animal should be taken to the farm, or worked on soft roads, if possible, as town pavement will greatly diminish his usefulness.

SANDCRACK.—This is an open crack or fissure in the wall of the hoof, running from the top downwards, the result of defect in secretion, or severe strain, and other causes which interfere with hoof formation. Lameness of variable character is present, sometimes accompanied with oozing of blood from the crack during motion. The accident is aggravated by the insinuation of wet, grit, &c.



Sandcrack.

Treatment.—Reduce local pain by poultices or fomentations, the shoe being first removed, and combat sys-

* For information in this department see "The Horse Owner and Stableman's Companion." London and New York: F. Warne & Co. Price 1s.

temic disturbance by febrifuges. One of the following plans may then be adopted, viz. :—

1. Open the crack from top to bottom, and remove the horn from each side in contact with the coronet for the space of an inch. Put on a bar shoe to relieve the affected part from pressure, and blister the coronet.

2. Prepare the foot for the bar shoe, then apply the heated firing iron across the crack about half an inch below the coronet until pain is evinced, and afterwards apply a blister.

3. A nail is driven through the hoof on each side of the crack, and their points turned down; they are afterwards united by wire, which is tightened, and thus the crack is closed. Another method consists of passing wire, &c., from one side of the crack to the other, by penetrating the hoof from without. The ends are finally brought together and twisted so as to close the crack. Some practitioners use an iron clamp made for the purpose by Messrs. Arnold & Son, of West Smithfield, E.C. It is inserted on the outside, and is closed by appropriate forceps. Another plan consists of winding strong waxed cord round the hoof, the crack being filled with gutta-percha or shoemaker's wax.

THRUSH.—Softening of the frog, with the discharge of a fœtid, inky fluid from the cleft or fissure. It is caused by contact with filth used as stopping, or excrement in which the animal stands. Paring away the frog in shoeing, and thus removing it from its natural office as a weight bearer, is also a prolific source of thrush.

Treatment.—Give the animal rest, if possible, when the case is severe, take off the shoes, lower the heels, thus bringing the frogs under pressure. Place the animal in a loose box having a dry floor, during the day. Pack the fissure daily with a small quantity of tow moistened with hydrochloric acid and water, equal parts of each, and afterwards charged with some of the following powder: oxide of zinc, 1 drm.; calomel, 2 drms. When the frog is so far shrivelled at the time the animal returns to work, put on a bar shoe with a fixed pad of leather to supply

temporary pressure, until the frog becomes sound and larger by growth.

Canker.—This disease is the result of neglect and constant application of filth to the feet, favoured, doubtless, by deteriorated system or coarseness of breed. Disintegration of horn substance by a septic condition, which eventually involves the soft tissues and bones beneath, appears to be the real nature of the complaint. The hoof is first softened by saturation with fluid, and becomes spongy, eventually taking the appearance of a fungus partially horn and flesh, which bleeds copiously on the least provocation, and emits a strong effluvia of sulphuretted hydrogen. It occurs in one or more feet at the same time.

Treatment.—Mild cases only are amenable to treatment; in others, the constitution is tainted, and cure is impossible under any system of treatment. Dry packing by tow, so as to induce pressure, has proved as successful as most plans. Caustic dressings have been used *ad libitum* with only questionable success. Laxatives, diuretics, and tonics are needed during the existence of the disease.

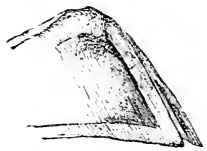
Keratoma; *Horn Tumours.*—As a result of pressure from nails in shoeing, tight clips, &c., irritation is induced, and the result is the formation of a horn tumour at the spot, being a diseased growth of the hoof upon the inner side.

Horn Tumours in the Foot.

The *remedy* is common-sense shoeing. Promote the growth of horn to provide a needful defence; use fine nails; fit the shoe to the hoof, hammer clips lightly, as well as the foot, remembering that it is made up of highly sensitive structures in addition to insensible horn.

Seedy Toe.—This consists of a separation of the horny wall from the horny laminæ, being widest at the junction of the sole with the wall, and filled with a grey powder, the result of disintegration of the hoof. Although the term fixes the complaint at the front of the

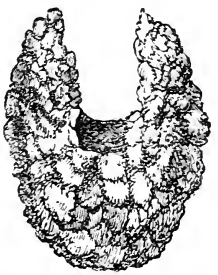
hoof, the disease is really not confined to that part. The pressure from clips or inequalities causing strain are the chief factors, and should be avoided.



Seedy Toe.

Treatment.—Remove pressure; promote the growth of strong, sound horn, and proceed as directed for Keratoma.

CORNS.—These are red, fleshy looking spots, situate in the horny sole at the angles of the inner heels, the result of bruising of the sensitive sole beneath. They are mostly confined to the fore feet, and the prolific source is paring away the hoof—fitting it to the shoe. Slight cases are dispersed, but long standing irritation involves other structures, the coffin-bone especially, and intractable lameness results.



Disease of the Coffin-Bone as a result of Corns.

Treatment.—Remove the shoes and apply poultices; febrifuges to allay fever; evacuate pus when formed; turn the animal barefoot upon a dry, hard floor; blisters to the coronet at intervals to promote the growth of sound horn in weak feet; put on a bar shoe, using the frog as a weight bearer; discard the filthy practice of "stopping" with manure, avoiding moisture from all sources as much as possible in the stable, and promote the growth of strong, sound horn—Nature's best protection.

CHAPTER XXVI.

PARASITIC DISEASES OF THE SKIN.

Animal Parasites:—Scabies, or Mange—Poultry Lousiness—Ticks and Maggots. Vegetable Parasites:—Favus—Tinea Tonsurans, or True Ringworm.

SCABIES, or *Mange*, is the common form of mange in horses, and is due to the presence of animal parasites which burrow beneath the epidermis in search of subsistence as well as a nidus. Great irritation results, especially at night, from which sensitive animals become almost frantic. The skin exhibits unusual scaliness, the hair is removed, and the epidermis is elevated and detached. The presence of the parasite and transmission of the disease to other animals determine the case.

Treatment.—Remove the healthy animals at once to a distance and to other buildings. Purify the clothing, harness, &c., which has been in use for those diseased, and cleanse the mangers, stalls, floors, walls, &c., as soon as possible. For this purpose few remedies are superior to "Sanitas" oil in cold water, soap being also used. For the animal, sulphur ointment answers well as a mild and soothing remedy. It should be well rubbed into the affected parts for two or three days, and afterwards may be washed off with water containing "Sanitas" oil and soap. If necessary, apply the ointment again when the hair is dry.

LICE.—These do not burrow, yet they create great irritation. Old and debilitated animals are the common subjects.

Treatment.—Proceed as in mange, or substitute for the sulphur ointment a decoction of Stavesacre seeds, using 1 oz. of the seeds to each pint of boiling water, and apply when cool by means of a brush; after which tie up the animal's head until the parts are dry. Allow good food, and administer tonics internally.

Poultry Lousiness; *Phthiriasis Equi.*—This form of disease is due to the ravages of a species of mite—*dermanyssus avium,* common to the ordinary fowl, as well as caged birds, as a result of stabling horses with fowls beneath the same roof. The attack is sudden, exciting the animal to acts of violence; it also continues for hours, and at night the irritation is even more severe, when the animal tears his skin with his teeth. Separate vesicles appear close together, and shortly agglomerate, covering a large surface, succeeded by peeling of the cuticle along with the hair, leaving bare patches varying in size from that of a pea to half an inch. If the disease is not arrested the entire skin will be disfigured and deprived of hair. The constitution does not suffer greatly, unless the attack is continued, when condition and power are sacrificed.

Treatment.—Remove the affected animals to temporary quarters, and dress with the Stavesacre solution advised for lice. Take away the fowls to a distance. Thoroughly cleanse the stable, first by fumigation with burning sulphur, washing afterwards with solutions of "Sanitas," then by whitewashing. Throw the place open for a week before the horses are taken back again.

Ticks and Maggots.—Ticks have the power of imbedding themselves in the skin, and annoy the horse exceedingly. The best way of defeating them is by dividing the body across by scissors; "Sanitas" oil, one part to six of olive oil, dropped upon them kills them at once.

Maggots numerously congregate in open wounds in hot weather. Use one part of oil of turpentine to four of olive oil; or the "Sanitas" mixture just referred to.

Two varieties of Vegetable Parasites are observed among horses, viz.:—

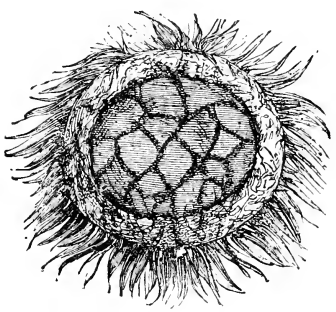
Favus, or *Honeycomb Ringworm,* is a cryptogamous fungus attacking the hair at its root, causing an eruption and irritation, subsequently drying up, leaving a yellow circular crust or scab, which ultimately reduces to a state

of powder, and emits a smell of mice. It is rare among horses.

Treatment.—Iodine ointment applied several times usually effects a cure.

The disease is common among mice, from whom cats receive it and convey it to horses.

TINEA TONSURANS; *True Ringworm.*—This is the familiar form of parasitic fungus among horses. It is also a disease of the hair bulbs and follicles. A circular patch is formed, which by enlargement invades a wider extent of surface. The hair on the edge of the patch breaks off short, and a crust of fungus is formed, which ultimately breaks down in a bran powder. There are no vesicles as in *Herpes circinatus*—false ringworm, which, on the other hand, has no scurf or scales. The fungus of true ringworm may be transferred to mankind and the ox tribe by contagion. The face, neck, back, and quarters are the parts most affected in horses.



Herpes Tonsurans, or True Ringworm.

Treatment.—Soften the crusts by means of lard, glycerine, or warm water, when they may be removed. The remedy afterwards is one of the following:—Iodine ointment, the mineral acids diluted, perchloride of iron, &c. "Sanitas" oil as a disinfectant should be used for cleansing the clothing, harness, and building, and may be applied to the diseased patches alternately with the above-named remedies.

CHAPTER XXVII.

LOCAL INJURIES.

Wounds—Bruises—Poll Evil—Fistula of the Withers—Speedy-cut—Quittor—Broken Knees—Wounds of Arteries and Veins.

THE affections due to injuries in the horse form an unusually extended list, and, to do them justice, volumes might be written upon each department. Some attempt has been made to deal with them somewhat extensively in a much larger work,* to which the reader is referred for more copious description.

WOUNDS OF THE FLESH.—Of these, four different kinds are recognised, viz., *incised, lacerated, contused*, and *punctured*.

Incised wounds are produced by some cutting instrument, by which the skin, &c., is evenly divided and without loss of substance. Profuse hæmorrhage is not an uncommon accompaniment, as bloodvessels are likely to be opened. Simple wounds are closed by sutures, such as pins, which are passed from the lip on one side to the other, and secured by soft twine; by strong thread used in a needle, making stitches as in ordinary sewing, finally securing the thread to prevent it being drawn out. The usual dressings are astringents, as Nos. 1 and 2. Febrifuges when fever calls for them.

Lacerated wounds are caused by tearing, as when hooks, nails, the horns of cattle, &c., enter the skin, the edges being ragged and uneven. Such wounds inflicted in the abdominal walls produce permanent ventral hernia, or, when the skin is divided, the contents are allowed to escape, when fatal results follow. Such wounds are often devoid of vitality, and subsequent sloughing is not uncommon, which retards recovery.

* "Every Man his own Horse Doctor." London and New York: Frederick Warne & Co. 868 pp. and upwards of 300 illustrations. Price 21*s*.

Treatment.—By sutures in the sound parts, or many-tailed bandage, after all foreign bodies are removed. Dressing as for preceding kind; also febrifuges if required.

Contused wounds are the result of severe blows, falls, &c., by which great damage is done to the soft parts.

Treatment consists of incessant fomentations as described at page 167, followed by liniments of camphor, turpentine, or ammonia, to recover vascular action. Scarification also may be called for.

Punctured wounds also form a dangerous, as well as tedious class, as none can tell with accuracy how far the instrument has penetrated, or what deeper seated tissues are involved. The most severe fever is to be expected. In shoeing we have examples of this class, modified by circumstances. In one instance the nail is driven through a portion of the sensitive structures where it remains until acute lameness or suppuration is established. In another, the sensitive parts are wounded but the nail is withdrawn, when dirt and moisture enter and set up irritation. *Gathered nails*, picked up on the road, are found embedded in the frog or one of the commissures, sometimes penetrating the joint within and terminating fatally. The usual method of testing foot lameness is by exerting pressure with the pincers or tapping the foot with the hammer.

Treatment.—Remove the offending instrument or foreign bodies at once when present. Flesh wounds may require incision, and healing fluids must be injected by means of a syringe. When joints are punctured, the orifice being small, it may usually be closed by slight touches with the actual cautery or budding iron, giving the animal perfect rest with fixing of the joint. In punctures of the feet the shoe must be removed, the offending nail being withdrawn at the same time. Having discovered the spot, the hole is to be carefully widened by the small knife called the "searcher," in order to evacuate any pus which may have formed or burrowed, together with all dead horn. Cover with a hot poultice frequently renewed until pain is removed. Apply tincture of myrrh

as a healing fluid, and when the shoe can be borne put a movable leather sole beneath to keep out dirt, &c. In dry weather, simple removal of the nail in recent cases is mostly sufficient, especially at the time the injury has been inflicted.

Puncture of the Coffin Joint is often a serious matter. Lameness is extreme, especially as synovia flows considerably. The remedy is the hot iron to seal up the orifice. The fever attendant upon punctured wounds is often of a severe character, when the febrifuges drench No. 3 may be called for every three or four hours.

Poll Evil.—This, with the following, are instances of bruising with abscess. Horses passing through low doorways, and housed in low buildings, strike the top of the head, and the result is stiffness, poking the nose forward, swelling of the poll, fear of being handled, and eventually, formation and bursting of an abscess.

Stiffness preceding abscess in Poll Evil.

Treatment.—In the early stages, when little pain, &c., is present, the swelling may be dissipated by cooling means, purgatives, &c., followed by iodine ointment. When pus is formed evacuate at once, the animal being cast for the purpose, the wound being kept clean and healing promoted by applications of "Sanitas," astringents, &c. In old standing cases bones and ligaments are often seriously involved, the animal being found dead from implication of the spinal cord or brain.

Fistula of the Withers arises from ill-fitting saddles, falls, bruises, &c., in rolling on the ground, and disease of the bones attends long standing cases. Deep-seated abscess first occurs, and the passage leading to it has a thick fibrous lining which prevents closure by healing.

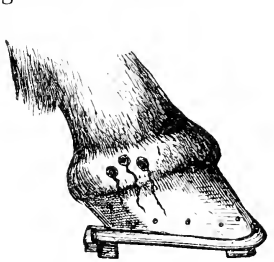
Treatment as for Poll Evil in the early stages. In fistula, free incisions, caustic injections, Nos. 6, 7, 8, or 9. Diseased bone needs removal, for which the veterinary surgeon is indispensable. Hypertrophy of the

cellular tissue also produces great deformity in coarse bred animals.

Speedy Cut is the term used to denote a bruise on the inner side of the leg, or otherwise above or below the knee, inflicted by the foot of the opposite leg. It is common to high-stepping horses, but others driven out of speed are liable to it, and those having calf knees and turned in toes suffer if their action is high. Riders of such horses are always in danger, as the blow causes the animal to fall as if shot. *Ordinary cutting* is confined to the fetlock joint. *Brushing* amounts to removal of the hair and slight abrasion of the skin, and with the former results from the use of heavy shoes and over-driving. Both evils are often remedied by an extra allowance of corn, care in driving and the application of very light shoes.

Banging implies injury on the inside and above the fetlock joint by the opposite foot, often resulting in serous or pustular abscess, and is removed by the same means as described for the preceding, the abscess being opened, and dressed with astringents.

Quittor is a fistulous opening in the coronet due to bruises or treads, and internal abscess following pricks or binds with nails in shoeing, and festered corns.



Quittor.

Treatment.—In recent cases evacuate the contained matter by means of a dependent orifice at the seat of the offending nail in the sole. Poultices applied hot, or persistent fomentations for hours. Febrifuges, caustic injections to the sinuses. Apply the bar-shoe to relieve pressure. Simple quittor from treads on the coronet are best treated by injections of caustics, or the knife is used to open up the sinuses. Remove pressure from the hoof by reducing it beneath the affected part.

Broken Knees.—Almost every variety of wound is

met with in injuries to the knees, for which the treatment of wounds already given is applicable. It is often a wise precaution to place a suitable splint at the back of the knee to prevent movement, during which rapid progress is made in the more serious cases, and even simple ones are much benefited, as in lying the wounds are opened and further damage is done. Extreme cases terminate in enlargement and stiffening of the joint.

WOUNDS OF ARTERIES AND VEINS.—These are not of very frequent occurrence as independent accidents, being nearly always associated with incised wounds. Bleeding from an artery is known by the bright scarlet colour, and the pulsating or spurting stream, while that from a vein is smaller, continuous, having less force, and the colour is a dark or Modena red. Hæmorrhage is arrested in various ways. Styptics, as tannic acid, contract the artery and coagulate the blood. The latter also forms a natural plug to the open vessel. Cotton wool, German tinder, &c., are effective; the hot iron, nitrate of silver, &c., are of the best. Bleeding from an artery is always serious, therefore professional help should be obtained as soon as possible, as a surgical operation may be required.

A simple method of arresting hæmorrhage in a limb consists of passing a soft rope, towel, or even a handkerchief, round and above the wound and tying to form a loose loop. A stick is then passed through about half way, forming two convenient handles for twisting the ligature thus formed, the result being pressure and arrest to the flow of blood.

CHAPTER XXVIII.

LOCAL INJURIES.

Fractures of Bones—General Treatment—Particular Fractures—Ostitis—Splints — Open Joint — Sprain — Ringbones — Sidebones — Navicular Disease—Luxation of the Patella—Capped Hock—Curb—Capped Elbow.

FRACTURES of bone are of several kinds. Long bones are subject to forms known as *transverse*, when the division is across and at right angles; *oblique*, when the broken surfaces are parallel but extending from one side to the other and the terminals of both being towards the ends of the injured bone; *comminuted*, when the bone is reduced to many fragments; and *compound*, when the splinters, &c., protrude externally through flesh and skin. The transverse and oblique forms are the only truly manageable among horses. Peculiarity of form as well as situation also greatly reduce the possibilities of a cure, as perfect rest, which is indispensable for the purpose, is always greatly interfered with if not altogether impossible.

Fractures are known by acute lameness, inability to use the limb, or rest upon it, intense pain and high fever, all of which are sudden in their appearance and may be traced to some accident, &c. Swelling may also be present, and manipulation gives rise to grating of the rough surfaces, known as *crepitus*. There is also more or less deformity.

Treatment of fractures is rendered uncertain by the inability to keep the animal sufficiently quiet. The appliances are *splints* made from wood, or gutta percha, the latter being softened in hot water and moulded upon the limb. *Starch bandages*, or strips of stout cotton fabric saturated in a strong solution of starch, are bound upon the limb, and in a few hours set firm and strong; Plaster of Paris, melted pitch and tow; but the first and second are the most useful.

In all cases the bones are carefully approximated in the first instance, and the appliances are adjusted with the view of remaining to the end. Care is required to avoid too great pressure, and also to keep the animal quiet. Slings may be called for, and domestic attention with food must be of the first order. *False joint* is the result of imperfect union. Fidgety animals keep up constant motion, and displace the bones. A small fragment also may be detached, and with constitutional defects may set up abscess, or reduce vitality.

Particular fractures will now be briefly considered.

Bones of the Cranium.—These are for the most part thin plates, but very strong, and enclosing the brain within. The usual causes are blows, falls, &c., and the results are often fatal. Compression of the brain follows on the bones being driven inwards; shock or concussion is the result of violence; and secondary compression is due to extravasation of blood, or formation of pus, the proceeds of local inflammation. Insensibility with coma, paralysis of motion and sensation are common in the first and second, and in the third they are delayed, depending upon the liberation of blood and formation of pus, sometimes for a few days.

Treatment.—A surgical operation, known as trephining, may be required, as well as the elevation of bone.

Occipital Crest.—This projection, situate between the ears, is often removed by striking low archways, stone lintels, &c., and is common in coal mines.

Treatment.—Remove loose bones, and close the wound by sutures, allowing the escape of pus. Use "Sanitas" dressings. Repeated injuries produce disease of the bone, as well as soft tissues, which require perfect rest and constant attention.

Bones of the Neck and Back.—Partial fracture produces a variable amount of deformity, stiffness, and pain, and in most cases the exact locality is not made out during life. Paralysis and death also follow at periods depending upon the severity and extent of the injury.

The *Sacrum* forms the upper prominence of the hind

quarters. It suffers in falls, and during violent struggles when the horse is "cast in the stall." The spine or the transverse process may be severed, each producing changes apparent to the eye, and for which absolute rest in slings may be useful if he is tractable. Embrocations to stimulate union; good laxative food. Deformity is permanent.

BONES OF THE TAIL.—Injuries to these bones are common in draught-horses, the tail being under the body of the cart as it descends upon the shafts. Railway horses suffer from the tail being crushed between the buffers. Simple fractures may be treated by the tail being bound in a leather case; but comminuted fractures are often attended by necrosis, abscess, gangrene, blood-poisoning, or tetanus. The early use of the knife, or complete amputation, may be needful.

BONES OF THE HAUNCH.—These comprise the Pelvis, and give entire conformation to the hind parts. The anterior spinous process suffers by striking the sides of doorways, walls, or pillars, when the horse is said to have a "quarter," or a "huggin down," a great disfigurement, which, however, does not militate against his usefulness. When the *shaft* of the bone is fractured, both usefulness and value are greatly reduced, and fracture of the *cup-joint* usually ends in fixing of the joint by inflammatory action and bony deposit. Another serious form of fracture is that of the *symphysis*, on the floor of the bony passage, union being interfered with by pressure of the haunches above. Young and valuable horses only should be treated, as rest during several months is required to effect a union.

In the *fore limbs* serious fractures are not uncommon.

The SCAPULA, *blade* or *shoulder bone*, is severed across the *neck;* the HUMERUS suffers in the *shaft*, usually from oblique fracture, and in both instances there is much deformity, with shortening of the limb, swelling, and infiltration after a short time. Absolute cure is impossible.

THE RADIUS AND ULNA form the elbow-joint by union with the humerus above. All parts of the first are liable

to fracture, and few cases are curable. Brood mares and entire horses of great value may be subjected to trial when the fracture is transverse, and favourably situated in the middle of the lower third of the *shaft*.

THE BONES OF THE KNEE suffer in falls, as broken knees, being sometimes comminuted, when stiffness of the joint follows, even in favourable course.

THE METACARPAL OR SHANK BONE suffers from all forms of fracture, the transverse being the only manageable one.

THE PASTERN BONES are sometimes split in halves from above downwards; occasionally across the middle, and more frequently comminuted.

THE SESSAMOID BONES at the back of the fetlock-joint are at times literally torn in two by unusual pressure exerted through the ligaments attached to them, when the back of the joint descends to the ground, the toe of the foot pointing upwards. Complete cure is rare.

THE NAVICULAR BONE within the hoof is subject to much pressure and violent shocks, and injury of any kind is attended with much fever, intense pain, and local inflammation. The tendon which plays over it is likewise involved, and sometimes becomes so diseased as to end in rupture. In any case, ossification of the joint is common, and the animal is rendered useless.

THE COFFIN BONE, although securely placed in its horny box, is liable to all forms of fracture. The pyramidal process and the wings are detached; portions of the body are split off by nails in shoeing by extremely ignorant workmen; and comminuted fractures are met with in runaway horses. Union may be effected in some instances, but the usefulness of the animal is impaired.

In the *hind extremities* the long bones, as in the fore limbs, are more commonly injured by fracture, the *transverse* and *oblique* kinds prevailing, the former being most amenable to treatment. The protuberances of the joints, termed condyles, are also severed, involving serious disease of the joint, shortening and deformity of the

limb, while lower down the bones suffer much in the same way with those in the fore limb, the results being also similar, and often presenting less favourable chances of success from any kind of treatment.

OSTITIS, *Inflammation of Bone*, occurs in all bones when subject to injury; but the disease assumes special characters in connection with the *cannon* or *shank-bone*. It is common to young race-horses as a result of excessive strain and shock in undeveloped limbs, causing swelling, great soreness, and lameness.

Treatment consists of division of the investing membrane of the bone by the knife. Hot fomentations or poultices; febrifuges, aperients, &c., and when the fever and local inflammation are abated iodine blisters are needed. The chronic form requires cold water, with similar medicines, and later, blisters, &c.

SPLINTS are bony tumours, the outcome of inflammation set up in the ligamentous tissue, which unites the small metacarpal or splint-bones with the larger or shank-bone. The actual cause is concussion, and the resulting inflammation, being continued and aggravated from time to time, supplies an amount of osseous material which not only unites the bones, but also forms a bony tumour upon the surfaces of both. The effect of this is to destroy elasticity and the possibility of motion, which in health always exists, and is necessary for the production of free and easy motion. The disease is principally confined to the inner side of the bones. Pain and stiffness, lameness, with the presence of a sensitive tumour, are the common signs in the early stages of the majority of cases where the tumour is close up to the knee-joint. If it be located lower down, the freedom from the usual inconvenience is moderated proportionately, even to the absence of lameness.

Treatment.—Cases of the latter description should not be interfered with. Subcutaneous periosteotomy often gives relief. Aperient No. 3, proportionately reduced, followed by febrifuges, when the state of the system is indicative of febrile action. In simple cases cooling or astringent lotions. Later the actual cautery in various

forms, or pyro-puncture may be tried. Large splints may need excision by means of the bone forceps; and a leather boot will be required.

OPEN JOINTS.—The escape of synovia by reason of punctures and other forms of injury to joints is often a serious state. The life of the animal is greatly jeopardised.

Treatment.—Early closing of the orifice is all important. This may be sometimes done rapidly by means of the hot iron, at a dull red heat only, providing the wound is simply cut open, not bruised by a fall, &c. A small amount of blister ointment applied round the orifice also hastens the process. Constitutional remedies will be required when acute fever is present; this should not be delayed. Put the animal in the slings also. When these means fail, the application of dry astringent powders should be tried, as a mixture of alum, oxide of zinc, &c., with wheat flour, by means of a strong worsted stocking passed up the leg and packed moderately tight. Put a splint to the back of the limb, and stop all motion of the joint, and when the wound is examined for cleansing and renewal of the powder, dress freely with astringent lotions. Much patience is required. The first token of success is a diminution of the local discharge, as well as severity of the systemic disturbance.

Sprain or Strain.—This is essentially a severe extension of the fibres of muscle or ligament, by which they are unable to regain their former condition, or they are lacerated—torn or ruptured. Those states mark the severity of the case. Besides the manifestations of lameness, varying from the slightest stiffness, or a limp, to halting, or inability to move, there is always proportionate heat and swelling, and these call for prompt measures; neglect usually resulting in chronic states which may admit of no relief.

Treatment.—See Fomentations. These often give the quickest and most permanent relief. Aperients to remove constipation. Febrifuges, to combat high febrile action. The latter being accomplished, cold astringent lotions, No. 1, evaporating lotions, &c., and when the natural

heat is established in the affected parts, embrocation No. 3 or 4 as may be required.

RINGBONES.—Repeated and long-continued inflammation, the result of concussion, involving the bones and ligamentous structures of the bones of the pastern, &c., result in a mass of bony deposit on the external surfaces, as to create great disfigurement as well as enlargement, sometimes to the extent of stiffening, and even fixing the joints. Such is known as a "ringbone," because it surrounds the bones.

SIDEBONES arise from similar causes as the preceding affection, the disease being ossification of the lateral cartilages of the coffin-bone. They are discovered on the upper and latter part of the hoof towards the heels. Like ringbones, they mostly attack the fore feet.

Treatment.—First reduce the systemic disturbance by aperients, febrifuges, &c., and the local heat by fomentations, proceeding as indicated generally for sprain. Later use the biniodide of mercury ointment, the actual cautery, &c. Abolish heels and toes as well as heavy shoes, and send the animal to work on the land.

SPAVIN.—This is the conventional term for a bony deposit upon the inner surface of the hock joint, arising from similar causes as already named in the preceding affections. Some spavins are small, and notwithstanding there is much pain and actual lameness, the practised eye only is able to pronounce definitely as to their existence. Stiffness of the joint is a concomitant, and the hard wearing of the toe of the shoe is evident.

Treatment as for the preceding.

NAVICULAR DISEASE, or *Grogginess.*—Disease of the navicular or shuttle-bone within the hoof. In well-defined cases the hoof is hot, dry, hard, upright, narrow, and the growth of horn is sometimes greatly increased. The frog is small, and drawn inwards towards the hoof. Pointing, and a restless movement often betokens pain as well as serious states.

Treatment of all kinds has been adopted, and in the majority of cases unsuccessfully. The great probability is that disease of the bone is extensive, to which is added

ulceration of the investing cartilage, as well as laceration of the tendon which plays over it as a rope over a pulley. Acute pain is detected by pressure in the hollow behind the frog. Sometimes lameness exists before the outward changes already described have taken place. Division of the nerves at the fetlock joint succeeds in some cases in restoring usefulness by the absence of sensation; but the disease progresses, and irrespective of injuries to the sensitive structures from pricks in shoeing, the concussion arising from working on hard roads induces severe inflammation, resulting in loss of the hoof. Such cases need the greatest care.

Other measures consist of fomentations, cold lotions applied by means of a thin bandage round the top of the hoof, a seton passed through the sensitive frog, blisters to the coronet.

Luxation of the Patella.—Dislocation of the knee-cap often arises in young growing animals, especially when turned upon hilly pastures. Older animals are subject to it from slipping in the stall, falls, or blows, in passing through doorways, &c., when the joint comes into violent contact with the jamb, post, &c. The animal cannot advance the foot; it is thrown violently backwards, stiff and straight, when by a convulsive act, and raising the whole body, the limb is jerked forwards, and the bone is forced back into its place, omitting a sharp clicking sound. Luxation occurs repeatedly.

Treatment.—Draw the foot forwards to the breast by means of a halter placed upon the pastern. If the bone is displaced outwardly, which is most common, push it inwards, or *vice versa*. Let the foot descend to the ground, but keep it considerably in advance of the other, by securing the halter to a collar placed upon the neck. Apply a smart blister to the outside of the joint only, using care that none passes inside, near the abdomen. Give good food, perhaps also iron tonics, and when recovery is established, turn the animal upon level pastures.

Capped Hock.—Swelling of the integuments of the point of the hock, together with enlargement of the

tendon, &c., beneath, is seen under various circumstances. It may arise from common bruises in lying upon the bare ground, stone floor, &c., blows from sticks in the hands of irascible grooms, &c., or the animal may cause it by kicking. Lameness is rarely the result. The enlargement is best treated by the application of the ointment of biniodide of mercury.

CURB is sprain of the straight ligament situate at the back of the hock, the result of hard work, severe galloping, rearing, blows, &c. Pain, swelling, and lameness are often signally present.

Treatment as for sprains generally (page 256), succeeded by ointment of the biniodide of mercury. Firing is sometimes helpful.

CAPPED ELBOW.—A large swelling on the back of the elbow-joint, composed of condensed tissue, the result generally of pressure from lying upon the heels of the shoe. In the early stages it may be reduced by iodine ointment, but old standing cases need surgical interference. The animal should wear a leather guard, the heels of the shoe being shortened or covered with a thick pad.

CHAPTER XXIX.

PLAIN RULES FOR SHOEING.

Nature and Preservation of the Hoof—Inherent Power of Reproduction—Preparation of the Foot—Stopping for Feet unnecessary—Dryness essential—Foot Ointments—Weak and defective Feet—Bar-shoes.

THE experience of Professor Sewell led him to state upwards of seventy years ago :—"I have seen more lame horses while posting from Harwich to London than I have met with in all my journey, and during my inspection of veterinary schools and public places in France, Switzerland, Germany, and Belgium." In 1871 Pro-

fessor Gamgee,* after quoting the above, stated that among the horses of London 42 per cent. were lame, while in Paris only 9 per cent. were subject to this form of unsoundness. Present-day experience still reveals the same state of things. The well-being of the best of animals is ever sacrificed to widespread ignorance and injustice. It is rare to find a shoeing-smith who possesses a really intelligent acquaintance with the wonderful structures of the "horny box"; and we need not feel surprised that he should treat it much as he would a similar box of wood, or that our steed goes "gingerly," and hobbles so painfully, that for our life we cannot make out what has come over him.

The secret of prolonged usefulness lies in the means for a strict preservation of the foot. This is an experience which many have gained only after years of bitter trial and disappointment.

The *hoof* is the fibrous horny box or case inside which are fitted the sensitive parts. Its growth is secured from above at the coronet downwards, where a special arrangement exists for its secretion. The *horny sole* and *frog* are the provision of a special secretion for the defence of sensitive structures beneath the coffin-bone, &c. As a whole, the hoof possesses a limited amount of elasticity, but its power of resistance to concussion is remarkable. It conducts heat feebly, and, with these qualities, proves highly serviceable for protection; while the substance, insensibility, and constant growth render it an admirable means for securing the usual iron defence—the shoe.

It is a fatal mistake to cut, rasp, and burn the hoof as is commonly done. Many forget the horse has to carry other weight besides that of his own body, and in progression he suffers from concussion in proportion as his natural defence is weakened and reduced. This practice is responsible for many forms of lameness besides those of the feet, as splints, spavins, ringbones, sidebones, &c.

The outer part of the *wall* or *crust* of the hoof, we have said, grows downwards, and is composed of tough, longitudinal fibres, the ends of which are presented to the

* "Horse-shoeing and Lameness." Longmans & Co. 1871.

ground, and prove exceedingly strong, resisting wear most effectually. It is designed to bear the greater part of the weight, and forms the most fitting to receive the shoe. This is the only part which needs to be cut away, and mostly at the toe, on the ground surface only, where the greatest activity in growth is manifest. The wall should not be rasped above the clinches on any account.

The *horny sole* and *frog* are capable of exfoliating, or detaching their superfluous parts in flakes or scales. None but loose portions should be removed, as the parts are capable of all needful reduction.

In applying the shoe there is no objection to its being red hot when the feet are perfectly strong and sound. The hot shoe makes for itself a more accurate bed than can be accomplished in any other way, and its adherence to the foot is more secure. In good sound hoofs the sole will bear a portion of the pressure, and the full-grown frog also proves a marvellous "buffer" to break the force of violent concussion on the road. It should always therefore be allowed to grow so as to touch the ground.

All who prefer to beautify the hoof by cutting, rasping, &c., will denounce these directions. We only reply, that our experience is that such a method is *the entire safeguard against lameness from all causes*, even pricking and binding by nails in shoeing is reduced to a minimum.

The nails should be evenly drawn.—Thick nails act as wedges, splitting the hoof, besides having other adverse tendencies. In "pointing" the nails make a long lead, and the holes in the shoe should be "coarse," that is, not too near the outer edge. In these lie greater safety; as snub-pointed nails and fine-seamed shoes are prolific sources of danger. The former nail is driven straight down, taking good hold of sound hoof, always going away from the sensitive parts; while the reverse holds good with snub nails and fine seams.

Shoes should always be level on the foot surface.—It follows also that they should be even on the ground surface. If the reader would test the effect of unevenness in his boot let him stand upon a single pebble, or drive in a nail on one side of the sole or heel. The joints above

are then sufferers, besides the sensitive parts below. Add to this the weight and speed of the animal in work.

Stopping for the feet is unnecessary.—If the plan we have briefly sketched is followed the reader will find the hoof possessed of its natural moisture, as well as the power of resistance as a defence on all kinds of roads. Under these circumstances the occasional loss of a shoe gives rise to no consternation, as in hoofs maltreated by the arts and devices of the olden time. *Outward moisture is not essential for healthy feet, but always injurious in proportion to its application*, especially in the form of manurial fluids in pastures and strawyards, &c., which soften and dissolve the horn. When horses need rest the advantages all round are eminently in favour of soiling in a roomy level box, well cleaned and dry, having a contiguous dry yard in which he can take a run from time to time.

Foot ointments are useful when properly made. Avoid the many quack nostrums, which are no better than common fat coloured with Stockholm tar. The latter with one-third of lard will form a good mixture for brushing round the hoof and defending it against wet, &c.

Thus far we have referred only to sound feet, and the way to keep them sound.

In weak shelly feet, and others reduced by injury, disease, &c., plans must be adopted to meet the various requirements. Such feet unshod may be wonderfully improved by a rest of some weeks on a dry floor thinly covered with straw or sawdust, as already recommended, or they may have light tips nailed on, the owner from this period visiting judgment on the smith who insists on cutting and burning the foot to fit the shoe. We have seen most satisfactory results from this plan, and in course of months or a year, under moderate work, the feet have been rendered sound and strong. The foot ointment is also a valuable adjunct in preventing drying and the effects of moisture. In those instances where fleshy feet and other defects of hoof structure are the results of breeding we have to make exceptions. The feet may be greatly benefited by the treatment we recommend, but

they never grow so firm and strong as the naturally healthy feet are capable of becoming.

Bar Shoes are intended to relieve pressure from the sole, a weak crust, &c., and to remove it to the frog. Cases of founder or laminitis, sidebones, corns, sand-cracks, quittor, &c., are thus treated often with marked benefit. When the frog is small and shrunk, &c., the pressure may be applied by means of a pad of leather rivetted upon the bar, which crosses the foot. The frog is also stimulated, and often grows satisfactorily by these means, while weak heels are relieved, and the usefulness of the animal much increased.

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